9 Math

Chapter 1 Rational Numbers

0

Add.

```
\frac{8}{5} + \frac{11}{6}
```

lecture video lecture video lecture video solution video QR code

1

Add.

```
\frac{1}{2} + \frac{2}{3} + \frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

2

Add.

```
\dfrac{7}{10} + \dfrac{4}{6}
```

lecture video lecture video lecture video solution video QR code

3

Add the following.

```
\displaystyle \frac{1}{15} + \frac{1}{12}
```

lecture video lecture video lecture video solution video QR code

4

Describe a situation in which you might add `\displaystyle \frac{1}{3} + \frac{1}{4} + \frac{1}{2}` .

lecture video lecture video lecture video solution video QR code

5

Evaluate.

```
\displaystyle \begin{array}{lllll} &(a) \phantom{.} 4 \frac{1}{2} + 8 \frac{1}{6} &(c) \phantom{.} 4 \frac{1}{3} + 12 \frac{5}{8} &(e) \phantom{.} 34 \frac{7}{10} + 16 \frac{3}{4}\\ &(b) \phantom{.} 3 \frac{3}{4} + 6 \frac{1}{5} &(d) \phantom{.} 1 \frac{4}{5} + 6 \frac{2}{3} &(f) \phantom{.} 11 \frac{1}{2} + 41 \frac{3}{5} \end{array}
```

lecture video lecture video lecture video solution video QR code

6

Determine two mixed numbers, with different denominators, that have the following properties.

a sum of `3\frac{4}{5}`

lecture video lecture video lecture video solution video QR code

7

Which of the following is the right steps to show the work for below:

Why is `3\frac{2}{5} - 1\frac{4}{7}` the same as `\frac{3}{7} + 1\frac{2}{5}`?

lecture video lecture video lecture video solution video QR code

8

Recalculate `3\frac{1}{4} - 1\frac{1}{2}` by following the steps below.

i. Find the difference between the whole parts.

ii. Subtract the fraction in the first mixed number from the fraction in the second mixed number.

iii. Subtract the answer in part (ii) from the answer in part (i).

lecture video lecture video lecture video solution video QR code

9

The sum of two mixed numbers is `2\frac{1}{2}` more than the difference. What are the two numbers?

lecture video lecture video lecture video solution video QR code

10

Subtract.

`5\dfrac{5}{7}- 1\dfrac{2}{7}`

lecture video lecture video lecture video solution video QR code

11

Subtract the following improper fractions in the fewest steps possible. Reduce your final answer.

`\displaystyle 12\frac{14}{13} - 3\frac{5}{3} =`

lecture video lecture video lecture video solution video QR code

12

Subtract the following improper fractions in the fewest steps possible. Reduce your final answer.

```
\displaystyle 5\frac{21}{5} - \frac{21}{3} =
```

lecture video lecture video lecture video solution video QR code

13

Evaluate.

```
\displaystyle \begin{array}{llllll} &(a) & \frac{3}{5} + 1\frac{2}{7} & &(b) & \frac{3}{
{11} - 1\frac{1}{9} \end{array}
```

lecture video lecture video lecture video solution video QR code

14

Calculate.

```
\displaystyle 9\frac{1}{7} -4\frac{4}{5}
```

lecture video lecture video lecture video solution video QR code

15

Find each difference.

```
\displaystyle 2 \frac{2}{3}-7 \frac{1}{3}
```

lecture video lecture video lecture video solution video QR code

16

Evaluate.

a) `\displaystyle 8 \frac{1}{4} - 2\frac{1}{2}`

b) `\displaystyle 4 \frac{7}{8} - 3\frac{8}{9}`

lecture video lecture video lecture video solution video QR code

17

Calculate without using a calculator.

```
\displaystyle 5\frac{5}{6}-3\frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

18

Calculate.

`\displaystyle \frac{38}{5} - 3\frac{1}{2}`

lecture video lecture video lecture video solution video QR code

19

Which of the following is the right steps to show the work for below:

Why is `3\frac{2}{3} - 1\frac{5}{6}` the same as `3\frac{5}{6} - 2`?

lecture video lecture video lecture video solution video QR code

20

Evaluate.

a) `\displaystyle 3 \frac{1}{2} - 1\frac{1}{5}`

b) `\displaystyle 7 \frac{3}{4} - 6\frac{1}{3}`

lecture video lecture video lecture video solution video QR code

21

Draw a model to show each calculation. Then determine the sum or difference.

a) `\dfrac{3}{4} + \dfrac{5}{6}`

b) `\dfrac{3}{8} - \dfrac{1}{6}`

lecture video lecture video lecture video solution video QR code

22

Mei used a number line to model each calculation. Explain how you know that her model is correct.

`\displaystyle 2 \frac{1}{3} + 3 \frac{1}{6} = 5 \frac{1}{2}`

lecture video lecture video lecture video solution video QR code

23

Use fraction strips to to evaluate each expression. What is the value of each expression?

`\displaystyle 9\frac{1}{8} - 6\frac{3}{4}`

lecture video lecture video lecture video solution video QR code

24

Use number lines to evaluate the following expressions.

```
\displaystyle 7\frac{3}{8} + 4\frac{1}{8}
```

lecture video lecture video lecture video solution video QR code

25

Use number lines to evaluate the following mixed fractions.

```
\displaystyle 7\frac{3}{8} - 4\frac{1}{8}
```

lecture video lecture video lecture video solution video QR code

26

Use number lines to evaluate the mixed fractions.

```
\displaystyle 6\frac{3}{8} + 5\frac{2}{3}
```

lecture video lecture video lecture video solution video QR code

27

Use number lines to evaluate the following expressions.

```
\displaystyle 3\frac{2}{5} - 1\frac{4}{5}
```

lecture video lecture video lecture video solution video QR code

28

Between which two whole numbers will leach sum lie?

```
\displaystyle 4\frac{1}{2} + 8\frac{1}{6}
```

lecture video lecture video lecture video solution video QR code

29

Between which two whole numbers will leach sum lie?

```
\displaystyle 3\frac{3}{4} + 6\frac{1}{5}
```

lecture video lecture video lecture video solution video QR code

30

Between which two whole numbers will leach sum lie?

```
\displaystyle 4\frac{1}{3} + 12\frac{5}{8}
```

lecture video lecture video lecture video solution video QR code

31

Between which two whole numbers will leach sum lie?

```
\displaystyle 1\frac{4}{5} + 6\frac{2}{3}
```

lecture video lecture video lecture video solution video QR code

32

Between which two whole numbers will leach sum lie?

```
\displaystyle 34\frac{7}{10} + 16\frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

33

Between which two whole numbers will leach sum lie?

`\displaystyle 11\frac{1}{2} + 41\frac{3}{5}`

lecture video lecture video lecture video solution video QR code

34

About `\frac{2}{5}` of the students in a school were invited to participate in a special Videoconferencing program. Only `\frac{1}{3}` of these students brought in their permlssion forms by the first day of the program. What fraction of the students were permitted to participate in the first day of the program?

lecture video lecture video lecture video solution video QR code

35

Jasleen goes to bed 3 h after dinner. Yesterday, she spent `1 \frac{1}{2}` h on her homework and `\frac{2}{3}` h on the telephone after dinner. How much time did she have left before bedtime?

lecture video lecture video lecture video solution video QR code

36

A pitcher of juice is half empty. After `\dfrac{1}{2}` cup of juice is added, the pitcher is `\dfrac{3}{4}` full. How much juice does the pitcher hold when it is full? Show your thinking.

lecture video lecture video lecture video solution video QR code

37

Which of these differences is greater than `\dfrac{1}{2}`? How do you know?

i) `\dfrac{5}{6} - \dfrac{2}{3}`

ii) `\dfrac{5}{6} - \dfrac{1}{2}`

iii) `\dfrac{5}{6} - \dfrac{1}{6}`

b) Explain how you found your answers in part a. Which other way can you find the fractions with a difference greater than `\dfrac{1}{2}` Explain.

lecture video lecture video lecture video solution video QR code

38

There are `\displaystyle 3 \frac{3}{4}` c of flour, `\displaystyle 1 \frac{1}{2}` c of sugar, `\displaystyle \frac{2}{3}` c of brown sugar, and `\displaystyle \frac{1}{4} \mathrm{c}` of oil in a cake mix. How many cups of ingredients are there in all?

A `\displaystyle 4 \frac{1}{2} \mathrm{c}`

C `\displaystyle 5 \frac{1}{2} \mathrm{c}`

B `\displaystyle 5 \frac{1}{6} \mathrm{c}`

D `\displaystyle 6 \frac{1}{6} \mathrm{c}`

lecture video lecture video lecture video solution video QR code

39

Franca is training to become a hospital aide. The first training session she attends is `3 \dfrac{1}{2}` days long. The second session is `1 \dfrac{3}{4}` days long. How long, in total is her training?

lecture video lecture video lecture video solution video QR code

40

A jug holds 2 cups of liquid. A recipe for punch is `\dfrac{1}{2}`cup of orange juice, `\dfrac{1}{4}` cup of raspberry juice, `\dfrac{3}{8}` cup of grapefruit juice, and `\dfrac{5}{8}` cup of lemonade. Is the jug big enough for punch? Explain.

lecture video lecture video lecture video solution video QR code

41

Kelly had `\dfrac{3}{4}` of a tank of gas at the beginning of the week. At the end of the of the week, Kelly had `\dfrac{1}{8}` of a tank left.

a) Did Kelly use more of less than `\dfrac{1}{2}` of a tank? Explain.

b) How much more or less than `\dfrac{1}{2}` of a tank did Kelly use?

lecture video lecture video lecture video solution video QR code

42

Two students, George and Mason, worked on a project.

George worked for `3\frac{2}{3}`h.

Mason worked for `2\frac{4}{5}`h

What was the total time spent on the project?

lecture video lecture video lecture video solution video QR code

43

Five friends shared two pizzas. Fran ate `\displaystyle \frac{1}{3}` of a pizza, Abdul ate `\displaystyle \frac{3}{8}` of a pizza, Hannah ate `\displaystyle \frac{1}{4}` of a pizza, and Siva ate `\displaystyle \frac{1}{2}` of a pizza. What fraction of the pizza remains for Brad?

lecture video lecture video lecture video solution video QR code

0

Draw each rectangle on grid paper. Use the rectangle to find each product.

`\frac{2}{5} \times \frac{1}{2}`

lecture video lecture video lecture video solution video QR code

1

Multiply. Draw a picture to show each answer.

`\dfrac{2}{15} \times 10`

lecture video lecture video lecture video solution video QR code

2

Use fraction strip to show the following visually.

`\displaystyle \frac{5}{6}` of `\displaystyle \frac{1}{2}`

lecture video lecture video lecture video solution video QR code

3

What division expression does each picture represent?

lecture video lecture video lecture video solution video QR code

4

Calculate.

```
\frac{3}{7}\times3\frac{1}{2}
```

lecture video lecture video lecture video solution video QR code

5

Convert the following fractions into Improper form of the fraction.

```
\displaystyle 12 \frac{1}{5} \times 1\frac{3}{5} =
```

lecture video lecture video lecture video solution video QR code

6

Convert the following fractions into Improper form of the fraction.

```
\displaystyle 4 \frac{3}{7} \times 2\frac{2}{11} =
```

lecture video lecture video lecture video solution video QR code

7

Calculate each product without using any calculator.

```
\displaystyle \frac{3}{4} \times 6\frac{11}{12}
```

lecture video lecture video lecture video solution video QR code

8

Evaluate.

```
\displaystyle 3 \frac{1}{5} \cdot \frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

9

Calculate each product without using any calculator.

```
\displaystyle 4\frac{1}{8} \times 5\frac{1}{3}
```

lecture video lecture video lecture video solution video QR code

10

Multiply.

```
4\frac{3}{8} \times 1\frac{1}{4}
```

lecture video lecture video lecture video solution video QR code

11

Show each multiplication using a different model. Determine the product.

```
\displaystyle 4\frac{2}{5} \times 3 \frac{3}{5}
```

lecture video lecture video lecture video solution video QR code

12

Without using your calculator, showing your working clearly, evaluate the following:

$\displaystyle \frac{4}{5} \times 3 \frac{2}{3}$

lecture video lecture video lecture video solution video QR code

13

Evaluate $\displaystyle \frac{2}{3} \div \frac{1}{4}$.

lecture video lecture video lecture video solution video QR code

14

Calculate.

$\frac{1}{2}\div\frac{1}{3}$

lecture video lecture video lecture video solution video QR code

15

Divide the following mixed numbers.

```
\displaystyle 1\frac{2}{5} \div 1\frac{1}{25}
```

lecture video lecture video lecture video solution video QR code

16

Convert the following fractions into Improper form then divide.

```
\displaystyle 2 \frac{5}{6} \div 1\frac{1}{6}
```

lecture video lecture video lecture video solution video QR code

17

Convert the following fractions into Improper form then divide.

```
\displaystyle 4 \frac{3}{7} \div 2\frac{2}{21}
```

lecture video lecture video lecture video solution video QR code

18

Calculate each quotient.

```
\displaystyle 9\frac{2}{3}\div 2\frac{2}{3}
```

lecture video lecture video lecture video solution video QR code

19

Calculate each quotient.

```
\displaystyle 2\frac{7}{8}\div 3\frac{5}{6}
```

lecture video lecture video lecture video solution video QR code

20

Calculate each quotient.

```
\displaystyle 8\frac{2}{3} \div 10 \frac{1}{2}
```

lecture video lecture video lecture video solution video QR code

21

Calculate each quotient.

`\displaystyle 8\frac{3}{4} \div 5 \frac{2}{5}`

lecture video lecture video lecture video solution video QR code

22

Calculate

`\displaystyle 1\frac{2}{3} \div 5\frac{5}{6}`

lecture video lecture video lecture video solution video QR code

23

Dividing a number by `\displaystyle 5 \frac{1}{2}` give the same answers as multiplying the number by ?

lecture video lecture video lecture video solution video QR code

24

For **i)**, determine the number represented by the rectangle and the triangle.

lecture video lecture video lecture video solution video QR code

25

Determine the number represented by the rectangle and the triangle.

```
\displaystyle 4 \frac{3}{4} \div 1 \frac{1}{6}=\square
```

```
\displaystyle \square \times 1 \frac{1}{6}=\triangle
```

lecture video lecture video lecture video solution video QR code

26

Without calculating the quotient, how do you know that `4\frac{2}{3} \div 10\frac{1}{4}` has to be less than `\frac{1}{2}`?

lecture video lecture video lecture video solution video QR code

27

Determine the value of x that makes each equation true.

```
\displaystyle (2\frac{1}{2})^x = \frac{5^4}{2^4}
```

lecture video lecture video lecture video solution video QR code

28

Determine the value of x that makes each statement true.

```
\displaystyle 2^x = \frac{1}{4}
```

lecture video lecture video lecture video solution video QR code

29

Determine the value of x that makes each equation true.

```
\displaystyle (6\frac{1}{2})^2 = \frac{x^2}{3^2}
```

lecture video lecture video lecture video solution video QR code

30

Evaluate.

```
\displaystyle (\frac{3}{4})^3
```

lecture video lecture video lecture video solution video QR code

31

Evaluate.

```
\displaystyle (\frac{5}{2})^3
```

lecture video lecture video lecture video solution video QR code

32

Evaluate.

```
\displaystyle (3\frac{1}{5})^3
```

lecture video lecture video lecture video solution video QR code

33

Are these two calculations equal? Show your work.

```
\displaystyle \frac{4}{9} \div \frac{2}{3} \text{ and } \frac{4\div 2}{9 \div 3}
```

lecture video lecture video lecture video solution video QR code

34

Show that the two calculations are equivalent in each set below.

```
\displaystyle \frac{28}{15} \div \frac{4}{5} \text{ and } \frac{28\div 4}{15 \div 35}
```

lecture video lecture video lecture video solution video QR code

35

Show that the two calculations are equivalent in each set below.

```
\displaystyle \frac{35}{48} \div \frac{5}{12} \text{ and } \frac{35\div 5}{48 \div 12}
```

lecture video lecture video lecture video solution video QR code

36

Andrea's bedroom is `1\frac{1}{3}` times as long as Kit’s bedroom and `1 \frac{2}{3}` times as wide. What fraction of the area of Kit’s bedroom is the area ofAndrea’s bedroom?

lecture video lecture video lecture video solution video QR code

37

Eileen used to be on the phone `3\frac{1}{2}` times as much as her sister every day. As a New Year's resolution, she decided to cut down to about `\frac{2}{5}` of the time she used to be on the phone. About how many times as much as her sister is Eileen now on the phone?

lecture video lecture video lecture video solution video QR code

38

Which whole numbers, N, find N to make the product of `3\frac{1}{5}` and `N\frac{3}{4}` great than 25?

lecture video lecture video lecture video solution video QR code

39

Why does finding out how many `\frac{3}{4}` strips fit along the length of 4 whole strips help you solve the problem?

lecture video lecture video lecture video solution video QR code

40

A mixed number was divided by `2\frac{3}{4}`. The quotient was a whole number larger than 10. What is possible for the mixed original number? State two possible solutions.

lecture video lecture video lecture video solution video QR code

41

A rectangle measuring `8\frac{1}{4}` units by `3\frac{3}{4}` units is to be completely covered by squares that are all the same size. What are the largest possible dimensions of the squares?

lecture video lecture video lecture video solution video QR code

0

Determine each quotient. Multiply to check.

```
\frac{192}{-12}
```

lecture video lecture video lecture video solution video QR code

1

Calculate.

```
\frac{(-6)(6)}{-4}
```

lecture video lecture video lecture video solution video QR code

2

Calculate

```
\displaystyle \frac{-4(15)}{-10}
```

lecture video lecture video lecture video solution video QR code

3

Use the fact that `\displaystyle n \times \frac{1}{n}= \frac{n}{n} = 1`, reciprocal rule to simplify the following expressions.

```
\displaystyle \frac{3 \times 7 \times 6}{-9 \times 14}
```

lecture video lecture video lecture video solution video QR code

4

Find each product.

```
\displaystyle -5^{2}
```

lecture video lecture video lecture video solution video QR code

5

Evaluate.

```
\displaystyle (-2)^{6}
```

lecture video lecture video lecture video solution video QR code

6

Without calculating, state whether the answer will be positive or negative.

$-(-2)^3$

lecture video lecture video lecture video solution video QR code

7

Without calculating, state whether the answer will be positive or negative.

-2^4

lecture video lecture video lecture video solution video QR code

8

Without calculating, state whether the answer will be positive or negative.

$-(-2)^4$

lecture video lecture video lecture video solution video QR code

9

Without calculating, state whether the answer will be positive or negative.

$-(-2^4)$

lecture video lecture video lecture video solution video QR code

10

Evaluate.

$\displaystyle -7^2 -2(-3)^3$

lecture video lecture video lecture video solution video QR code

11

Show the steps required to evaluate the following expressions.

$\displaystyle -4^2 -(-4)^2 - 4^2$

lecture video lecture video lecture video solution video QR code

12

(a) Evaluate each power: `(-2)^2, (-2)^3, (-2)^4, (-2)^5`

(b) Examine the signs of your answers. What pattern do you notice?

(c) Explain how you can tell the sign of the answer when a power has a negative base. Create and use examples of your own to illustrate your explanation.

lecture video lecture video lecture video solution video QR code

13

Determine the value that makes each equation true.

```
\displaystyle \bigcirc^3 = -27
```

lecture video lecture video lecture video solution video QR code

14

Determine the value that makes each equation true.

```
\displaystyle -\bigcirc^2 = -25
```

lecture video lecture video lecture video solution video QR code

15

Determine the value that makes each equation true.

```
\displaystyle -4^{\bigcirc} = -64
```

lecture video lecture video lecture video solution video QR code

16

Evaluate.

```
\displaystyle -5^3
```

lecture video lecture video lecture video solution video QR code

17

Evaluate.

```
\displaystyle -4^3
```

lecture video lecture video lecture video solution video QR code

18

Evaluate.

```
\displaystyle -(-3)^4
```

lecture video lecture video lecture video solution video QR code

19

Evaluate.

```
\displaystyle (-6)^2
```

lecture video lecture video lecture video solution video QR code

20

Evaluate.

```
\displaystyle (-4)^3
```

lecture video lecture video lecture video solution video QR code

21

Evaluate.

```
\displaystyle -(-3)^3
```

lecture video lecture video lecture video solution video QR code

22

Solving the equation `\bigcirc^2 = 64` give two possible integer values. Determine all possible values.

lecture video lecture video lecture video solution video QR code

23

Evaluate each expression without using a calculator.

```
\displaystyle 5(-2)^3
```

lecture video lecture video lecture video solution video QR code

24

Evaluate. Remember to use the correct order of operations.

```
2^4-2^2+2^3
```

lecture video lecture video lecture video solution video QR code

25

Evaluate each expression. Name the property used in each step.

```
(2^5-5^2)+(4^2-2^4)
```

lecture video lecture video lecture video solution video QR code

26

Evaluate.

```
\displaystyle 5^2 -6^2 \div 2^2
```

lecture video lecture video lecture video solution video QR code

27

Evaluate each expression without using a calculator.

```
\displaystyle -4(-5) - (-3)^3
```

lecture video lecture video lecture video solution video QR code

28

Evaluate each expression without using a calculator.

```
\displaystyle \frac{(-2)^2 - 22}{-3^2}
```

lecture video lecture video lecture video solution video QR code

29

Evaluate each expression without using a calculator.

```
\displaystyle [-2(-1)^3]^6
```

lecture video lecture video lecture video solution video QR code

30

Evaluate each expression without using a calculator.

```
\displaystyle \frac{3^3 + 3(7)}{-2^4} + \frac{3(-5)^2}{-15}
```

lecture video lecture video lecture video solution video QR code

31

Find the error in each solution. Explain what was done incorrectly. Redo the solution, making the necessary

```
\begin{array}{llll} &-2(3)^2; \text{ step 1}\\ &= (-6)^2; \text{ step 2}\\ &= 36; \text{
step 3} \end{array}
```

lecture video lecture video lecture video solution video QR code

32

Both Claire and Robin calculated `5(-2) -3(-2)`. Clare's calculations

Clare's calculations

```
\begin{array}{c} &5(-2) -3(-2) \\ &= -10 + 6 \\ &= -4 \\ \end{array}
```

Robin's calculations

```
\begin{array}{c} &5(-2) -3(-2); \text{ step 1 }\\ &= 2(-2); \text{ step 2 }\\ &=-4;
\text{ step 3 }\\ \end{array}
```

Both students are correct. Explain Robins' reasoning from step 1 to 2.

lecture video lecture video lecture video solution video QR code

33

Find the error in each solution. Explain what was done incorrectly. Redo the solution, making the necessary

```
\begin{array}{c} &-4[5- 2(-3)]; \text{ step 1 }\\ &= -4[3(-3)]; \text{ step 2}\\ &=
-4[-9]; \text{ step 3}\\ &= 36; \text{ step 4 }\\ \end{array}
```

lecture video lecture video lecture video solution video QR code

34

Evaluate each expression when `x = -2` and `y = -1`.

```
\displaystyle x^2 + y^3
```

lecture video lecture video lecture video solution video QR code

35

Evaluate each expression when `x = -2` and `y = -1`.

```
\displaystyle 2y^5 - (3 -x)^2
```

lecture video lecture video lecture video solution video QR code

36

Evaluate each expression when `x = -2` and `y = -1`.

```
\displaystyle x^2 + [5x -2(y - x)]
```

lecture video lecture video lecture video solution video QR code

37

Evaluate each expression when `x = -2` and `y = -1`.

```
\displaystyle 5y^3(-x^4)
```

lecture video lecture video lecture video solution video QR code

38

Evaluate each expression when `x = -2` and `y = -1`.

```
\displaystyle \frac{8(x+ y^2)}{x^2}
```

lecture video lecture video lecture video solution video QR code

39

Evaluate each expression when $x = -2$ and $y = -1$.

$\displaystyle \frac{y^5 + y^3 + y}{y^6 + y^4 + y^2}$

lecture video lecture video lecture video solution video QR code

40

valuate the expression $-y^2 -4x^3$ when $x = -2$ and $y = 3$.

lecture video lecture video lecture video solution video QR code

41

Assume b and n are positive integers. When n is an odd number, decide whether $-b^n +(-b)^n$ is positive, negative, or zero. Explain your reasoning.

lecture video lecture video lecture video solution video QR code

42

Assume `b` and `n` are positive integers. When n is an even number, decide whether `-b^n +(-b)^n` is positive, negative, or zero. Explain your reasoning.

lecture video lecture video lecture video solution video QR code

43

Evaluate the following

```
\displaystyle \begin{array}{ccc} &(i) (-2)^3(-2)^4 &&(ii) (-2)^2(-2)^6 &&(iii) (-2)(-2)^5
\end{array}
```

lecture video lecture video lecture video solution video QR code

44

Evaluate the following

```
\displaystyle \begin{array}{ccc} &(i) \frac{(-3)^9}{(-3)^7} &&(ii) \frac{(-3)^8}{(-3)^4}
&&(iii) \frac{(-3)^5}{(-3)} \\ \end{array}
```

lecture video lecture video lecture video solution video QR code

45

Determine the value that makes each equation true.

```
\displaystyle \bigcirc^5 = 32
```

lecture video lecture video lecture video solution video QR code

46

Determine the value that makes each equation true.

```
\displaystyle \bigcirc^5 = -32
```

lecture video lecture video lecture video solution video QR code

47

Factor the polynomial.

```
\displaystyle x^4=2^4
```

lecture video lecture video lecture video solution video QR code

48

When $x = 2$, $y = -3$ and $z = -1$ find the value of

$\displaystyle \frac{x -y^2}{2z - x + y}$

lecture video lecture video lecture video solution video QR code

49

Evaluate each expression for s =4 and t =8.

$\displaystyle 3 s t^{2} \div(s t)+6$

lecture video lecture video lecture video solution video QR code

50

Evaluate each expression for the given values.

$\displaystyle \frac{x}{y} + \frac{y}{x}$ when $x = -1\frac{1}{2}$ and $y = 2\frac{1}{4}$

lecture video lecture video lecture video solution video QR code

0

Calculate.

```
\displaystyle 7\frac{1}{3} + 2\frac{1}{2}
```

lecture video lecture video lecture video solution video QR code

1

Calculate.

```
\displaystyle 4\frac{2}{5} + 1\frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

2

Estimate each to whole number.

- `\displaystyle 7\frac{1}{3} + 2\frac{1}{2}`
- `\displaystyle 4\frac{2}{5} + 1\frac{3}{4}`
- `\displaystyle 6\frac{3}{4} -6\frac{2}{3}`
- `\displaystyle 9\frac{1}{7} -4\frac{4}{5}`

lecture video lecture video lecture video solution video QR code

3

Calculate.

`\displaystyle 6\frac{3}{4} -6\frac{2}{3}`

lecture video lecture video lecture video solution video QR code

4

Calculate.

`\displaystyle 9\frac{1}{7} -4\frac{4}{5}`

lecture video lecture video lecture video solution video QR code

5

Which of the following correctly explains `3\frac{1}{5} - 2\frac{1}{4}` has the same answer as `\frac{3}{4} + \frac{1}{5}`?

lecture video lecture video lecture video solution video QR code

6

John works part-time at a restaurant. On Friday he worked `3\frac{1}{4}` h and on Saturday he worked `6\frac{1}{2}` h. How many hours did he work altogether?

lecture video lecture video lecture video solution video QR code

7

Calculate each product without using a calculator.

```
\displaystyle 2\frac{5}{8} \times \frac{4}{11}
```

lecture video lecture video lecture video solution video QR code

8

Calculate each product without using a calculator.

```
\displaystyle 1\frac{3}{5} \times 1\frac{2}{7}
```

lecture video lecture video lecture video solution video QR code

9

Calculate each product without using a calculator.

```
\displaystyle 2\frac{3}{5} \times 3\frac{1}{3}
```

lecture video lecture video lecture video solution video QR code

10

Calculate each product without using a calculator.

```
\displaystyle 7\frac{1}{5} \times 4\frac{5}{6}
```

lecture video lecture video lecture video solution video QR code

11

Calculate each quotient without using a calculator.

```
\displaystyle 5\frac{3}{4} \div \frac{1}{2}
```

lecture video lecture video lecture video solution video QR code

12

Calculate each quotient without using a calculator.

```
\displaystyle \frac{1}{2} \div 5\frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

13

Calculate each quotient without using a calculator.

```
\displaystyle 6\frac{2}{3} \div 2\frac{1}{6}
```

lecture video lecture video lecture video solution video QR code

14

Calculate each quotient without using a calculator.

```
\displaystyle 10\frac{5}{8} \div 5\frac{1}{3}
```

lecture video lecture video lecture video solution video QR code

15

Find the missing value.

```
\displaystyle \square \div 5\frac{1}{3} = 4\frac{2}{3}
```

lecture video lecture video lecture video solution video QR code

16

Find the missing value.

```
\displaystyle 7\frac{3}{4} \div \square = 5\frac{1}{6}
```

lecture video lecture video lecture video solution video QR code

17

Melissa is adjusting the two removable shelves in her cupboard. The shelves are to be equally spaced in the cupboard. How much space is above or below each shelf?

lecture video lecture video lecture video solution video QR code

18

Suppose the on screen cursor represents any numeric character. Determine the number of numeric characters that can fit on the calculator screen.

lecture video lecture video lecture video solution video QR code

19

Calculate

a) `\displaystyle (-11)^2`

b) `\displaystyle (-4)^2`

c) `\displaystyle -7^2`

d) `\displaystyle -11^3`

lecture video lecture video lecture video solution video QR code

20

Determine at least four other powers that have the same value as `8^2`.

lecture video lecture video lecture video solution video QR code

21

Calculate. Show your steps.

`-[(5)(-1)]^3 - 2(-4)^3`

lecture video lecture video lecture video solution video QR code

22

When `x = 2, y = -3` and `z = -1` find the value of

`x^2 + y^2 + z^2`

lecture video lecture video lecture video solution video QR code

23

When `x = 2, y = -3` and `z = -1` find the value of

`\displaystyle 2[x-(y-z)^4]`

lecture video lecture video lecture video solution video QR code

24

When `x = 2, y = -3` and `z = -1` find the value of

`\frac{2y + 4z}{-x}`

lecture video lecture video lecture video solution video QR code

25

When `x = 2, y = -3` and `z = -1` find the value of

`\displaystyle \frac{x -y^2}{2z - x + y}`

lecture video lecture video lecture video solution video QR code

0

Convert the following fractions into decimal.

`\displaystyle \frac{5}{6}`

lecture video lecture video lecture video solution video QR code

1

Convert the following fractions into decimal and decimal into fractions.

a) `0.12`

b) `\displaystyle \frac{5}{8}`

lecture video lecture video lecture video solution video QR code

2

Convert the following decimal into fractions.

`\displaystyle 0.33`

lecture video lecture video lecture video solution video QR code

3

Write each fraction as a decimal.

```
\displaystyle -\frac{4}{3}
```

lecture video lecture video lecture video solution video QR code

4

Rename the following rational numbers as quotients of two integers.

```
\displaystyle -5\frac{6}{7}
```

lecture video lecture video lecture video solution video QR code

5

Rename the following rational numbers as decimals.

```
\displaystyle \frac{-3}{4}
```

lecture video lecture video lecture video solution video QR code

6

Rename the following rational numbers as decimals.

```
\displaystyle -\frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

7

Rename the following rational numbers as decimals.

```
\displaystyle -7\frac{5}{6}
```

lecture video lecture video lecture video solution video QR code

8

Convert the following rational numbers as decimals.

```
\displaystyle \frac{1}{5}
```

lecture video lecture video lecture video solution video QR code

9

Write it as a decimal.

```
\displaystyle \begin{array}{cccccc} &(a) & \frac{7}{1000} &(b) & \frac{16}{100} \\ &(c) &
\frac{843}{1000} & (d) & \frac{91}{10000} \\ \end{array}
```

lecture video lecture video lecture video solution video QR code

10

Convert the following decimal into fractions and reduce the fractions.

```
\displaystyle 8.24
```

lecture video lecture video lecture video solution video QR code

11

Convert the following decimal into fractions.

```
\displaystyle 0.255
```

lecture video lecture video lecture video solution video QR code

12

Rename the following rational numbers as quotients of integers.

```
\displaystyle -11.46
```

lecture video lecture video lecture video solution video QR code

13

Identify the values represented by a, b, c, d, and e, in decimal form.

lecture video lecture video lecture video solution video QR code

14

Identify the values represented by a, b, c, d, and e, as quotients of two integers.

lecture video lecture video lecture video solution video QR code

15

Use >, <, or = to make true statements. Explain how you know each statement is true.

```
\displaystyle 0 \bigcirc -0.5
```

lecture video lecture video lecture video solution video QR code

16

Use >, <, or = to make true statements. Explain how you know each statement is true.

```
\displaystyle -4.3 \bigcirc -3.4
```

lecture video lecture video lecture video solution video QR code

17

Use >, <, or = to make true statements. Explain how you know each statement is true.

```
\displaystyle -1\frac{2}{5} \bigcirc 1\frac{2}{5}
```

lecture video lecture video lecture video solution video QR code

18

Use >, <, or = to make true statements. Explain how you know each statement is true.

```
\displaystyle -4\frac{1}{2} \bigcirc -\frac{9}{2}
```

lecture video lecture video lecture video solution video QR code

19

Use >, <, or = to make true statements. Explain how you know each statement is true.

```
\displaystyle -2\frac{3}{10} \bigcirc -2.\bar{3}
```

lecture video lecture video lecture video solution video QR code

20

True or false? Justify your answer.

All mixed numbers can be renamed as decimals.

lecture video lecture video lecture video solution video QR code

21

True or false? Justify your answer.

A rational number can be expressed as nay integer divided by any other integer.

lecture video lecture video lecture video solution video QR code

22

True or false? Justify your answer.

`1 > - 1 000 000`

lecture video lecture video lecture video solution video QR code

23

If `a` and `b` are positive numbers and `a < b`, how do `-a` and `-b` compare? Explain why.

lecture video lecture video lecture video solution video QR code

24

Write as an improper fraction:

`\displaystyle 3 \frac{2}{3}`

lecture video lecture video lecture video solution video QR code

25

Write as a mixed number:

`\displaystyle 9 \frac{14}{3}`

lecture video lecture video lecture video solution video QR code

26

Name three fractions between `\frac{2}{3}` and `\frac{3}{8}`.

lecture video lecture video lecture video solution video QR code

27

Name three fractions between `\frac{2}{3}` and `\frac{3}{8}`.

lecture video lecture video lecture video solution video QR code

28

Write each decimal as a fraction.

`0.0777...`

lecture video lecture video lecture video solution video QR code

29

Write each repeating decimal as a fraction in simplest form.

`\displaystyle 0 . \overline{5}`

lecture video lecture video lecture video solution video QR code

30

Convert the following decimal into fraction.

```
\displaystyle 0.3\overline{2}
```

lecture video lecture video lecture video solution video QR code

31

Express the repeating decimal as a fraction.

```
\displaystyle 2.11 \overline{25}
```

lecture video lecture video lecture video solution video QR code

32

Write each repeating decimal as a fraction in simplest form.

```
\displaystyle 0 . \overline{21}
```

lecture video lecture video lecture video solution video QR code

0

Evaluate without using a calculator.

```
\displaystyle 2.5 - 7.5
```

lecture video lecture video lecture video solution video QR code

1

Evaluate without using a calculator.

```
\displaystyle -2(9.5)
```

lecture video lecture video lecture video solution video QR code

2

Evaluate without using a calculator.

```
\displaystyle -4.2 + (-2.8)
```

lecture video lecture video lecture video solution video QR code

3

Estimate the two consecutive integers between which each answer will lie.

```
-9.37 -5.93
```

lecture video lecture video lecture video solution video QR code

4

Evaluate without using a calculator.

```
\displaystyle \frac{8}{-0.5}
```

lecture video lecture video lecture video solution video QR code

5

Estimate the two consecutive integers between which each answer will lie.

```
\displaystyle -\frac{3.046}{10}
```

lecture video lecture video lecture video solution video QR code

6

Evaluate without using a calculator. Clearly show how you simplified the negatives.

```
\displaystyle -\frac{4}{3} + \frac{1}{3}
```

lecture video lecture video lecture video solution video QR code

7

Calculate. Show your work.

```
\displaystyle \frac{6}{5}-\frac{3}{2}
```

lecture video lecture video lecture video solution video QR code

8

Evaluate without using a calculator. Clearly show how you simplified the negatives.

```
\displaystyle \frac{3}{4} -\frac{5}{4}
```

lecture video lecture video lecture video solution video QR code

9

Evaluate without using a calculator. Clearly show how you simplified the negatives.

```
\displaystyle \frac{-4}{7}\times \frac{6}{-5}
```

lecture video lecture video lecture video solution video QR code

10

Which of the following correctly explains why below is equal or not equal to `\displaystyle \frac{3}{4}(\frac{5}{8})`.

```
\displaystyle -\frac{3}{4}(-\frac{5}{8})
```

lecture video lecture video lecture video solution video QR code

11

Which of the following correctly explains why below is equal or not equal to `\displaystyle \frac{3}{4}(\frac{5}{8})`?

```
\displaystyle \frac{-3}{4}(\frac{5}{-8})
```

lecture video lecture video lecture video solution video QR code

12

Which of the following correctly explains below is the same or different from `\displaystyle \frac{3}{4}(\frac{5}{8})`?

`\displaystyle \frac{-3}{4}(\frac{-5}{8})`

lecture video lecture video lecture video solution video QR code

13

Which of the following correctly explains below is the same or different from `\displaystyle \frac{3}{4}(\frac{5}{8})`.

`\displaystyle \frac{3}{-4}(-\frac{5}{8})`

lecture video lecture video lecture video solution video QR code

14

Calculate. Show your work.

`\displaystyle (\frac{5}{-12})(-\frac{8}{15})`

lecture video lecture video lecture video solution video QR code

15

Find the product. Show your work.

```
\displaystyle -2\frac{1}{2}(-1\frac{3}{5})
```

lecture video lecture video lecture video solution video QR code

16

Calculate. Show your work.

```
\displaystyle 3\frac{6}{7}(-\frac{1}{3})
```

lecture video lecture video lecture video solution video QR code

17

Evaluate without using a calculator. Clearly show how you simplified the negatives.

```
\displaystyle \frac{2}{5}\div (-\frac{5}{8})
```

lecture video lecture video lecture video solution video QR code

18

Calculate. Show your work.

```
\displaystyle \frac{15}{16}\div(-1\frac{1}{24})
```

lecture video lecture video lecture video solution video QR code

19

Calculate. Show your work.

```
\displaystyle -4\frac{2}{3}\div\frac{7}{12}
```

lecture video lecture video lecture video solution video QR code

20

Calculate. Show your work.

```
\displaystyle -2\frac{5}{6} \div (-1\frac{1}{12})
```

lecture video lecture video lecture video solution video QR code

21

Evaluate.

$\displaystyle -\frac{15}{16}\times 3\frac{1}{5} \div (-1\frac{2}{3})$

lecture video lecture video lecture video solution video QR code

22

Estimate the two consecutive integers between which each answer will lie.

$3.64 + 72.9$

lecture video lecture video lecture video solution video QR code

23

Estimate the two consecutive integers between which each answer will lie.

$-6.5(-10.1)$

lecture video lecture video lecture video solution video QR code

24

The daily changes in selling price for a particular stock during a week were `-\$2.78, -\$5.45 , -\$5.45, \$0.38`, and `\$2.12`.

If the selling price of the stock was `\$58.22` at the start of the week, then what was the selling price at the end of the week?

lecture video lecture video lecture video solution video QR code

25

The daily changes in selling price for a particular stock during a week were `-\$2.78, -\$5.45 , -\$5.45, \$0.38`, and `\$2.12`.

What was the average daily change in selling price for the stock during this week?

lecture video lecture video lecture video solution video QR code

26

Calculate. Show your work.

```
\displaystyle -\frac{3}{8}+1\frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

27

Calculate. Show your work.

```
\displaystyle -5\frac{1}{2}+2\frac{2}{3}
```

lecture video lecture video lecture video solution video QR code

28

Calculate. Show your work.

```
\displaystyle -7\frac{3}{5}+(-8\frac{1}{4})
```

lecture video lecture video lecture video solution video QR code

29

Calculate. Show your work.

```
\displaystyle -3\frac{1}{3}-5\frac{4}{5}
```

lecture video lecture video lecture video solution video QR code

30

Calculate. Show your work.

`\displaystyle -9\frac{1}{2} -(-10\frac{3}{4})`

lecture video lecture video lecture video solution video QR code

31

Evaluate each expression.

`\displaystyle -\frac{2}{5}+\frac{3}{-4}-2\frac{2}{3}`

lecture video lecture video lecture video solution video QR code

32

Yolo takes `\displaystyle \frac{3}{4}` hours to cut his family's front lawn and `\displaystyle 1\frac{1}{3}` hours to cut the back lawn. How much longer does it take Yolo to cut the back lawn?

lecture video lecture video lecture video solution video QR code

33

(a) In each case, determine the numbers represented by the rectangle and the triangle.

(b) Describe the connection between the number represented by the rectangle and the number represented by the triangle

(c) Create a similar question that demonstrates this connection.

lecture video lecture video lecture video solution video QR code

34

Determine the value that makes each equation true

```
\displaystyle -\frac{3}{4} + \bigcirc = 1
```

lecture video lecture video lecture video solution video QR code

35

Determine the value that makes each equation true

```
\displaystyle -\frac{3}{4} - \bigcirc = 1
```

lecture video lecture video lecture video solution video QR code

36

Determine the value that makes each equation true

```
\displaystyle -\frac{3}{4} \times \bigcirc = 1
```

lecture video lecture video lecture video solution video QR code

37

Determine the value that makes each equation true

```
\displaystyle -\frac{3}{4} \div \bigcirc = 1
```

lecture video lecture video lecture video solution video QR code

38

Without calculating, determine the sign for each answer. Then, use a calculator to complete the calculation.

```
\displaystyle -3.2(4.2- 10)
```

lecture video lecture video lecture video solution video QR code

39

Without calculating, determine the sign for each answer. Then, use a calculator to complete the calculation.

```
\displaystyle -0.7 - 5.8(12)
```

lecture video lecture video lecture video solution video QR code

40

Evaluate.

```
\displaystyle -3.4(-2.3)+ 5.7(-9.1)
```

lecture video lecture video lecture video solution video QR code

41

Without calculating, determine the sign for each answer. Then, use a calculator to complete the calculation.

```
\displaystyle \begin{array}{ccccccccc} &(i)& 6.2(-3.1)(7.3-0.9) &(ii)& \frac{3.2}{-1.2} +
\frac{-4.5}{-6} &(iii) & \frac{8.5 - (-2.3)}{2(-1.2)}\\ \end{array}
```

lecture video lecture video lecture video solution video QR code

42

Evaluate.

```
\displaystyle -2\frac{1}{3}+(\frac{3}{-4})\times(-1\frac{5}{6})
```

lecture video lecture video lecture video solution video QR code

43

Calculate using a calculator.

```
5.25(-2\frac{7}{8}) - 8.5(-3\frac{3}{4})
```

lecture video lecture video lecture video solution video QR code

44

Evaluate each expression.

```
\displaystyle -2\frac{1}{4}\times (1\frac{3}{4} - 5\frac{1}{2})
```

lecture video lecture video lecture video solution video QR code

45

Calculate using a calculator.

$-3.4 + 2\frac{1}{2} - 0.68(2\frac{16}{17})$

lecture video lecture video lecture video solution video QR code

46

The formula to convert temperatures between degrees Fahrenheit and degrees Celsius is $C = \frac{5}{9}(F-32)$. Apply the formula to convert the following.

Miami, Florida's record high of $98^{o}F$ to degrees Celsius.

lecture video lecture video lecture video solution video QR code

47

The formula to convert temperatures between degrees Fahrenheit and degrees Celsius is $C = \frac{5}{9}(F-32)$. Apply the formula to convert the following.

Anchorage, Alaska's record low of $-38^{o}F$ to degrees Celsius.

lecture video lecture video lecture video solution video QR code

48

The formula to convert temperatures between degrees Fahrenheit and degrees Celsius is `C = \frac{5}{9}(F-32)`. Apply the formula to convert the following.

Create a similar question that demonstrates this connection.

lecture video lecture video lecture video solution video QR code

49

The formula to convert temperatures between degrees Celsius and degrees Fahrenheit is `F= \frac{9}{5}C + 32`. Use this formula to convert the following.

The boiling point of water, `100^{o} C`, to degrees Fahrenheit.

lecture video lecture video lecture video solution video QR code

50

The formula to convert temperatures between degrees Celsius and degrees Fahrenheit is `F= \frac{9}{5}C + 32`. Use this formula to convert the following.

Normal body temperature, `37^{o}`, to degrees Fahrenheit.

lecture video lecture video lecture video solution video QR code

51

Evaluate each expression for the given values.

`\displaystyle x - 2y` when `x = -9.78` and `y = 3.2`

lecture video lecture video lecture video solution video QR code

52

Evaluate each expression for the given values.

`(x + y)(x - y)` when `x = 2.5` and `y = -7.8`

lecture video lecture video lecture video solution video QR code

53

Evaluate each expression for the given values.

`x(x + y)` when `x = -2\frac{1}{2}` and `y = 3\frac{3}{4}`

lecture video lecture video lecture video solution video QR code

54

Evaluate each expression for the given values.

$\displaystyle \frac{x}{y} + \frac{y}{x}$ when $x = -1\frac{1}{2}$ and $y = 2\frac{1}{4}$

lecture video lecture video lecture video solution video QR code

55

James finished a full marathon in a time of `3:57:53.3` (`hours:minutes:seconds`). The winner of the marathon finished in a time of `2:25:55.6`. Determine how much longer James took to complete the marathon than the winner did.

lecture video lecture video lecture video solution video QR code

56

Calculate $\displaystyle -2\frac{3}{5} + 1\frac{1}{4}$ without using a calculator.

lecture video lecture video lecture video solution video QR code

57

Calculate `\displaystyle-2\frac{4}{7} + 1\frac{1}{6}` without using a calculator.

lecture video lecture video lecture video solution video QR code

58

Calculate.

`\displaystyle -(2\frac{1}{4})^2+1.5^3`

lecture video lecture video lecture video solution video QR code

59

Calculate.

`\displaystyle -5\frac{2}{3} + 3.\bar{6}(0.\bar{3})^2`

lecture video lecture video lecture video solution video QR code

60

`\displaystyle 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{2}}}` is an example of a continued fraction.

The continued fraction above is equal to?

lecture video lecture video lecture video solution video QR code

61

`\displaystyle 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{2}}}` is an example of a continued fraction.

Determine the continued fraction representation for `1\frac{4}{5}`.

Hint `\frac{4}{5} = \frac{1}{\frac{5}{4}}`

lecture video lecture video lecture video solution video QR code

62

A backyard deck has an area out of square blocks that are `1\frac{1}{2}` ft by `1\frac{1}{2} ft`. The area of his patio is `175\frac{1}{2}` sq ft and the length is `19\frac{1}{2} ft`.

a) Determine the width of his patio.

b) Determine the number of blocks Gavin used to make his patio.

lecture video lecture video lecture video solution video QR code

0

Evaluate the expression.

```
\displaystyle (-3)^{4}
```

lecture video lecture video lecture video solution video QR code

1

Use `4.5^2 = 20.25` and `4.5^3 = 91.125` to evaluate the powers.

```
\displaystyle (-4.5)^3
```

lecture video lecture video lecture video solution video QR code

2

Without evaluating, state if the answer is positive or negative.

a) `\displaystyle -(-\frac{2}{3})^2 ,`

b) `\displaystyle -(-\frac{2}{3})^3`

lecture video lecture video lecture video solution video QR code

3

Without evaluating, state if the answer is positive or negative.

a) `\displaystyle -(\frac{2}{3})^3`

b) `\displaystyle (\frac{-2}{-3})^5`

lecture video lecture video lecture video solution video QR code

4

Evaluate the powers

```
\displaystyle \begin{array}{cccccccc} &(a) & -\frac{4}{3} (-\frac{2}{3})^2 &(c) & -(-
\frac{2}{3})^2 &(e)&-(\frac{2}{3})^3 \\ &&&&&&\\ &(b) & -(\frac{2}{3})^2 &(d) & -(-
\frac{2}{3})^3 &(f) & (\frac{-2}{-3})^5 \\ \end{array}
```

lecture video lecture video lecture video solution video QR code

5

Calculate.

`\displaystyle -2(-3.1)^3`

lecture video lecture video lecture video solution video QR code

6

Calculate.

```
\displaystyle -7.1^2+7.1^2
```

lecture video lecture video lecture video solution video QR code

7

Calculate.

```
\displaystyle -(\frac{4}{5})^2+(\frac{5}{4})^2
```

lecture video lecture video lecture video solution video QR code

8

Calculate.

```
\displaystyle -2\frac{1}{3} -(-\frac{2}{3})^3
```

lecture video lecture video lecture video solution video QR code

9

Use `4.5^2 = 20.25` and `4.5^3 = 91.125` to evaluate the powers.

```
\displaystyle -4.5^2
```

lecture video lecture video lecture video solution video QR code

10

Without evaluating, state if the answer is positive or negative.

a) `\displaystyle -\frac{4}{3}`

b) , `\displaystyle -(\frac{2}{3})^2`

lecture video lecture video lecture video solution video QR code

11

Use `4.5^2 = 20.25` and `4.5^3 = 91.125` to evaluate the powers.

```
\displaystyle -4.5^3
```

lecture video lecture video lecture video solution video QR code

12

Evaluate `-4.5 +2(3.1 -9.8)^2`.

lecture video lecture video lecture video solution video QR code

13

Calculate.

`\displaystyle 8.9-3.2^2`

lecture video lecture video lecture video solution video QR code

14

Calculate.

`\displaystyle 0.6^2-2(3.4-5.2)`

lecture video lecture video lecture video solution video QR code

15

Calculate.

```
\displaystyle -6.02-2(-6.71)+2.3^3
```

lecture video lecture video lecture video solution video QR code

16

Calculate.

```
\displaystyle \frac{2.3^3 -5.4}{-3^2}
```

lecture video lecture video lecture video solution video QR code

17

Calculate.

```
\displaystyle \frac{2.3^3-5.4}{-3^2}
```

lecture video lecture video lecture video solution video QR code

18

Calculate.

$$\displaystyle 2(-\frac{1}{3})^2$$

lecture video lecture video lecture video solution video QR code

19

Calculate.

$$\displaystyle -\left(\frac{4}{5}\right)^{2}+\left(\frac{5}{4}\right)^{2}$$

lecture video lecture video lecture video solution video QR code

20

Calculate.

$$\displaystyle \frac{-\frac{1}{3}+(\frac{1}{4})^2}{-1\frac{1}{6}}$$

lecture video lecture video lecture video solution video QR code

21

Calculate.

```
\displaystyle (-(2\frac{1}{2})^2)^2
```

lecture video lecture video lecture video solution video QR code

22

Rob invests `\$100` in an account earning interest at a rate of 500 per year for `10` years. Sharon invests the same amount of money as Rob but she earns interest at a rate of `10\%` per year for 3 years.

Calculate the value of both investments.

lecture video lecture video lecture video solution video QR code

23

Tania invests `\$100` and earns interest at a rate of `4\%` per year for 10 years. Eda invests `\$100` and earns interest at a rate of `2\%` every 6 months for 10 years.

a) Calculate the value of both investments.

b) Explain why Eda's investment is worth more at the end of 10 years.

lecture video lecture video lecture video solution video QR code

24

radioactive material has a half-life of 1 day. The material decays according to the equation `M = 1000(\frac{1}{2})^t`. Mass M is measured in grams and time `t` is measured in days.

a) What is the mass of the sample after 1 day? 2 days? 10 days?

b) Use a calculator with an exponent key to compute the mass of the sample after 1 year. Explain what the answer means.

lecture video lecture video lecture video solution video QR code

25

Evaluate the following expressions.

`x^2 + x - 5` when `x = 1 \frac{3}{4}`

lecture video lecture video lecture video solution video QR code

26

Evaluate the following expressions.

`3x^2 + 6x` when `x = - \frac{1}{4}`

lecture video lecture video lecture video solution video QR code

27

Solve for x.

```
\displaystyle 5(\frac{x}{3})^2 - 3\frac{1}{9}= - \frac{8}{9}
```

lecture video lecture video lecture video solution video QR code

0

Calculate without using a calculator.

```
\displaystyle 1\frac{2}{3}+9\frac{1}{2}
```

lecture video lecture video lecture video solution video QR code

1

Calculate without using a calculator.

```
\displaystyle 4\frac{3}{8} + 2\frac{1}{4}
```

lecture video lecture video lecture video solution video QR code

2

Calculate. Show your work.

```
\displaystyle 2\frac{1}{4} - 5\frac{1}{3}
```

lecture video lecture video lecture video solution video QR code

3

Calculate without using a calculator.

```
\displaystyle 8\frac{1}{6}-7\frac{2}{3}
```

lecture video lecture video lecture video solution video QR code

4

Calculate without using a calculator.

```
\displaystyle 5\frac{5}{6}-3\frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

5

Calculate. Show your work.

```
\displaystyle -5\frac{2}{5} + 2\frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

6

Calculate without using a calculator.

```
\displaystyle 1\frac{3}{4} \times 3\frac{1}{2}
```

lecture video lecture video lecture video solution video QR code

7

Calculate without using a calculator.

```
\displaystyle 5\frac{7}{9} \times 6\frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

8

Calculate without using a calculator.

```
\displaystyle 1\frac{2}{3} \div 4\frac{5}{6}
```

lecture video lecture video lecture video solution video QR code

9

Calculate `\displaystyle (2\frac{2}{5})^2`

lecture video lecture video lecture video solution video QR code

10

Which of the following explains the two are either same or not same? `-8^2` and `(-8)^2`.

HINT

lecture video lecture video lecture video solution video QR code

11

Evaluate.

`\displaystyle (-8 +2)^2\div (-4 + 2)^2`

lecture video lecture video lecture video solution video QR code

12

Evaluate.

```
\displaystyle \frac{(-16 + 4)\div 2}{8 \div(-8)+ 4}
```

lecture video lecture video lecture video solution video QR code

13

Evaluate.

```
\displaystyle 16 -[3(6-3)-12]
```

lecture video lecture video lecture video solution video QR code

14

Evaluate.

```
\displaystyle \frac{20+(-12)\div(-3)}{(-4 -12)\div(-2)}
```

lecture video lecture video lecture video solution video QR code

15

Calculate. Show your steps.

`[5.12 - 3(4.1)]^3`

lecture video lecture video lecture video solution video QR code

16

Calculate. Show your steps.

`9.1^3 -6.7^2`

lecture video lecture video lecture video solution video QR code

17

Evaluate.

`x^2-4x` for `x = -3`

lecture video lecture video lecture video solution video QR code

18

Evaluate.

`\displaystyle yx^2 + xy` for `x = -4` and `y = 5`

lecture video lecture video lecture video solution video QR code

19

Evaluate each.

`\displaystyle (3a - 2b)^3` when `\displaystyle a = -1.1, b = 2.2`

lecture video lecture video lecture video solution video QR code

20

Evaluate.

`\displaystyle \frac{-x^4-5x}{x + (-1)^3}` for `x = -2`

lecture video lecture video lecture video solution video QR code

21

What two integers is `-2.6` located on the number line.

lecture video lecture video lecture video solution video QR code

22

What two integers is `-\frac{24}{5}` located on the number line.

lecture video lecture video lecture video solution video QR code

23

Calculate. Show your work.

`\displaystyle -6\frac{3}{4} (5\frac{1}{9})`

lecture video lecture video lecture video solution video QR code

24

Calculate. Show your work.

```
\displaystyle 1\frac{3}{4} \div (-\frac{30}{49})
```

lecture video lecture video lecture video solution video QR code

25

Calculate.

```
6.4 - 4.2 \times 1.5
```

lecture video lecture video lecture video solution video QR code

26

Calculate.

```
-12.4 + (-16.8)\div (-4.2)
```

lecture video lecture video lecture video solution video QR code

27

Calculate.

```
\displaystyle \frac{15.3 + 2.7\div 3}{-2 \times 8.1}
```

lecture video lecture video lecture video solution video QR code

28

Calculate.

```
\displaystyle \frac{16 - 4.8 \times 2.1}{6 + 6 \div (-6)}
```

lecture video lecture video lecture video solution video QR code

29

Calculate. Show your work.

```
\displaystyle \frac{2}{5}\div(-\frac{2}{5}+\frac{1}{10})
```

lecture video lecture video lecture video solution video QR code

30

Calculate. Show your work.

```
\displaystyle [\frac{1}{8} + (-\frac{2}{3})]\times \frac{12}{13}
```

lecture video lecture video lecture video solution video QR code

31

Calculate. Show your steps.

```
\displaystyle -2\frac{1}{10} + (2\frac{3}{5} - 3\frac{1}{4})^3
```

lecture video lecture video lecture video solution video QR code

32

Calculate. Show your steps.

```
\displaystyle -\frac{1}{4} \div \frac{5}{4} - 2\frac{1}{3} \div(-\frac{2}{3})^3
```

lecture video lecture video lecture video solution video QR code

33

Calculate. Show your work.

```
\displaystyle -\frac{5}{6}+ \frac{-2}{3}\times \frac{3}{4}
```

lecture video lecture video lecture video solution video QR code

34

Calculate. Show your work.

```
\displaystyle -1\frac{1}{2}+ \frac{-1}{-2} -\frac{-3}{5}
```

lecture video lecture video lecture video solution video QR code

35

Mike invests `\$100` in an account earning interest at a rate of `4\%` every 6 months. Calculate the value of his investment at the end of `4` years.

lecture video lecture video lecture video solution video QR code

36

Use >, <, or = to make true statements. Explain how you know each statement is true.

a) `\displaystyle (\frac{1}{-2})^3 \bigcirc (\frac{1}{2})^2`

b) `\displaystyle (\frac{3}{4})^3 \bigcirc (-\frac{1}{4})^2`

c) `\displaystyle (-0.5)^3 \bigcirc (\frac{1}{2})^2`

d) `\displaystyle (\frac{3}{2})^3 \bigcirc (-\frac{3}{-2})^4`

lecture video lecture video lecture video solution video QR code

37

Find the area of the circle using `A = \pi r^2` when given each radius

a) `r = 5.2 cm`

b) `r = 2\frac{5}{8}` in.

c) `r = 8.9 m`

d) `r = 4\frac{2}{3}` in.

lecture video lecture video lecture video solution video QR code

38

Evaluate each.

`\displaystyle 4a^2b^2` when `\displaystyle a = \frac{-2}{3}, b = -\frac{1}{2}`

lecture video lecture video lecture video solution video QR code

39

Evaluate each.

`\displaystyle (2ab)^2` when `\displaystyle a = -0.5, b = 1.2`

lecture video lecture video lecture video solution video QR code

40

Evaluate each.

`\displaystyle (\frac{2a}{5b})^2` when `\displaystyle a = 1\frac{1}{2}, b =-\frac{2}{5}`

lecture video lecture video lecture video solution video QR code

Chapter 2 Exponents & Polynomials

0

Sketch models to represent each of the following algebraic expressions. The variables `x` and `y` do not represent the same number.

`x^2`

lecture video lecture video lecture video solution video QR code

1

Calculate the side length of a square with an area of `49 cm^2`.

lecture video lecture video lecture video solution video QR code

2

Sketch models to represent each of the following algebraic expressions.

The variables `x` and `y` do not represent the same number.

`x^2`

lecture video lecture video lecture video solution video QR code

3

Sketch models to represent each of the following algebraic expressions.

The variables `x` and `y` do not represent the same number.

`x^3`

lecture video lecture video lecture video solution video QR code

4

Sketch models to represent each of the following algebraic expressions.

The variables `x` and `y` do not represent the same number.

`y`

lecture video lecture video lecture video solution video QR code

5

Sketch models to represent each of the following algebraic expressions.

The variables `x` and `y` do not represent the same number.

`(2y)^2`

lecture video lecture video lecture video solution video QR code

6

The area of some squares are shown. Determine or estimate the length of the sides of each square. use a calculator to check your answers.

144 km^2

lecture video lecture video lecture video solution video QR code

7

The area of some squares are shown. Determine or estimate the length of the sides of each square. use a calculator to check your answers.

75 cm^2

lecture video lecture video lecture video solution video QR code

8

The area of some squares are shown. Determine or estimate the length of the sides of each square. use a calculator to check your answers.

0.01 m^2

lecture video lecture video lecture video solution video QR code

9

Choose the expression that represents the indicated quantity:

lecture video lecture video lecture video solution video QR code

10

Choose the expression that represents the indicated quantity:

lecture video lecture video lecture video solution video QR code

11

Choose the expression that represents the indicated quantity:

the side length

lecture video lecture video lecture video solution video QR code

12

Choose the expression that represents the indicated quantity:

lecture video lecture video lecture video solution video QR code

13

If the footprint of a square building has an area of `50 m^2`, which is a bette estimate for the length of the front of the building: `7.2 m` or `7.7 m`? Explain how you can answer this without using a calculator.

lecture video lecture video lecture video solution video QR code

14

If the length of the side of a square game board is `\sqrt{1000} cm`, what is the area of the game board? How can you check your answer?

lecture video lecture video lecture video solution video QR code

15

Draw or build a model of the algebraic expression `ab` where `a` is not equal to `b`. Explain how this model is the same as and how it is different from a model of the algebraic expression `a^2`.

lecture video lecture video lecture video solution video QR code

16

Draw or build a model of the algebraic expression abc where `a, b`, and `c` are not equal to each other. Compare this to a model of the algebraic expression `ab^2`.

lecture video lecture video lecture video solution video QR code

17

The symbol `\sqrt[3]{\bigcirc}` represents the cube root. For example, `4 \times 4 \times 4 = 64, \sqrt[3]{64} =4`. Create a geometric model to represent `\sqrt[3]{64}`. Explain why the model makes sense.

lecture video lecture video lecture video solution video QR code

0

Simplify

```
(2^2)(2^3)
```

lecture video lecture video lecture video solution video QR code

1

Simplify.

```
\displaystyle{\left(\frac{2}{5}\right)^3\left(\frac{2}{5}\right)^2\left(\frac{2}
{5}\right)^4}
```

lecture video lecture video lecture video solution video QR code

2

Simplify.

```
(5^7)(5^4)
```

lecture video lecture video lecture video solution video QR code

3

Simplify.

```
(5^6)(5^5)
```

lecture video lecture video lecture video solution video QR code

4

Simplify.

```
(5^4)(5^2)(5^5)
```

lecture video lecture video lecture video solution video QR code

5

Simplify.

```
(5^3)(5)(5^5)(5^2)
```

lecture video lecture video lecture video solution video QR code

6

Simplify

```
(x^4)(x^3)
```

lecture video lecture video lecture video solution video QR code

7

Simplify.

```
(m^4)(m^2)
```

lecture video lecture video lecture video solution video QR code

8

Simplify.

```
(7^3)(7)(x^4)(x^2)
```

lecture video lecture video lecture video solution video QR code

9

Simplify.

```
(x^4)(-2)(x^5)(-2)^3
```

lecture video lecture video lecture video solution video QR code

10

Simplify.

```
(a^5)(3^2)(a^4)(a)(3)
```

lecture video lecture video lecture video solution video QR code

11

Simplify

```
\displaystyle \frac{2^5}{2^2}
```

lecture video lecture video lecture video solution video QR code

12

Simplify if possible, and then evaluate

```
\displaystyle \frac{(2^7)}{2^5}
```

lecture video lecture video lecture video solution video QR code

13

Simplify

```
\displaystyle \frac{5^7}{5^2}
```

lecture video lecture video lecture video solution video QR code

14

Simplify if possible, and then evaluate

```
\displaystyle \frac{2^8}{2^5}
```

lecture video lecture video lecture video solution video QR code

15

Simplify if possible, and then evaluate

```
\displaystyle \frac{\left(\frac{2}{7}\right)^4}{\left(\frac{2}{7}\right)^2}
```

lecture video lecture video lecture video solution video QR code

16

Simplify

```
\displaystyle \frac{y^6}{y^3}
```

lecture video lecture video lecture video solution video QR code

17

Simplify

```
\displaystyle \frac{m^4}{m^2}
```

lecture video lecture video lecture video solution video QR code

18

Simplify

```
\displaystyle \frac{(2^5)(x^3)}{(2^4)(x^2)}
```

lecture video lecture video lecture video solution video QR code

19

Simplify

```
\displaystyle \frac{(-5)^3 y^{10}}{(-5)(y^6)(y^3)}
```

lecture video lecture video lecture video solution video QR code

20

Simplify

```
\displaystyle \frac{(7^6)(a^3)(7^2)}{(7^3)a}
```

lecture video lecture video lecture video solution video QR code

21

Simplify if possible, and then evaluate

```
\displaystyle \frac{(5^5)(3)(3^4)}{(3^3)(5^4)}
```

lecture video lecture video lecture video solution video QR code

22

Simplify if possible, and then evaluate

```
\displaystyle \frac{\left(\frac{4}{5}\right)^5 \left(\frac{4}{5}\right)^4}{\left(\frac{4}
{5}\right)^6}
```

lecture video lecture video lecture video solution video QR code

23

Simplify, and then evaluate for `x=2` and `y=5`

```
\displaystyle \frac{(x^4)(x^3)}{x^6}
```

lecture video lecture video lecture video solution video QR code

24

Simplify, and then evaluate for `x=2` and `y=5`.

```
\displaystyle \frac{(y^6)(y^4)}{(y^8)(y)}
```

lecture video lecture video lecture video solution video QR code

25

Simplify, and then evaluate for `x=2` and `y=5`

```
\displaystyle \frac{y^6 x^4}{x^3 y^3}
```

lecture video lecture video lecture video solution video QR code

26

Simplify

```
\displaystyle \frac{(10^{10})x^4 y^5}{(10^8)xy}
```

lecture video lecture video lecture video solution video QR code

27

Simplify

```
\displaystyle \frac{x^2 y^4}{x^3 y}
```

lecture video lecture video lecture video solution video QR code

28

Simplify, and then evaluate for `x=2` and `y=5`.

```
\displaystyle \frac{(y^6)(x^4)}{(x^3)(y^3)}
```

lecture video lecture video lecture video solution video QR code

29

Simplify, and then evaluate for `x=2` and `y=5`.

```
\displaystyle \frac{6(x^4(y^6)}{3(x^3)(y^3)}
```

lecture video lecture video lecture video solution video QR code

30

Simplify, and then evaluate for `x=2` and `y=5`.

```
\displaystyle \frac{6x^4y^6}{3x^3y^3}
```

lecture video lecture video lecture video solution video QR code

31

Simplify.

```
(5^2)(5^8)
```

lecture video lecture video lecture video solution video QR code

32

Create four different expressions involving exponents that simplify to `7^8`

lecture video lecture video lecture video solution video QR code

33

Simplify if possible, and then evaluate

```
\displaystyle \frac{(4^5)(4^6)}{4^7}
```

lecture video lecture video lecture video solution video QR code

34

Simplify if possible, and then evaluate

```
\displaystyle \frac{(7^3)(3^2)(3^4)(7)}{(3^3)(7^2)}
```

lecture video lecture video lecture video solution video QR code

35

Simplify if possible, and then evaluate

```
\displaystyle \frac{(4.2^3)(4.2^5)}{4.2^7}
```

lecture video lecture video lecture video solution video QR code

36

If you know that the product of two points is `7^{10}` and that the quotient is `7^2`, what could the two powers be? How could you verify your answer?

lecture video lecture video lecture video solution video QR code

37

Complete the table to show the relationship between the metric units of length. Express each relationship as a power with base 10.

```
\displaystyle \begin{array}{|l|l|l|l|l|} \hline & Millimetres & Centimetres & Metres &
Kilometres \\ \hline Millimetres & & & & \\ \hline Centimetres & & & & \\ \hline Metres &
& & & \\ \hline Kilometres & & & & \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

38

- **a)** Evaluate `\displaystyle \frac{3^5}{3^5}`
- **b)** Simplify `\displaystyle \frac{3^5}{3^5}` using the exponent principle for quotients.
- **c)** Use the meaning of the powers in `\displaystyle \frac{3^5}{3^5}` to simplify the expression.
- **d)** Discuss what `3^0` might mean.
- **e)** Discuss whether `a^0` would have a similar meaning for any value of `a`.

lecture video lecture video lecture video solution video QR code

39

Simplify.

```
\displaystyle k^2n^3 \times kn^4
```

lecture video lecture video lecture video solution video QR code

40

Simplify.

```
\displaystyle a^2b^2\times a^3b
```

lecture video lecture video lecture video solution video QR code

41

Multiply.

```
\displaystyle \left(8 r^{3} s^{2} t\right)\left(4 s^{3} t\right)
```

lecture video lecture video lecture video solution video QR code

42

Simplify.

```
(b^5)3^4(b^3)3^2(b^7)
```

lecture video lecture video lecture video solution video QR code

43

Simplify

```
\displaystyle \frac{(xy)^5}{x^4 y^3}
```

lecture video lecture video lecture video solution video QR code

44

Simplify, and then evaluate for `x=2` and `y=5`.

```
\displaystyle \frac{\left(\frac{3}{4}xy\right)^3}{\left(\frac{3}{4}\right)^2 xy^2}
```

lecture video lecture video lecture video solution video QR code

45

Simplify, and then evaluate for $x=2$ and $y=5$.

$\displaystyle \frac{(x^5)(x^4)}{x^8}$

lecture video lecture video lecture video solution video QR code

46

Scientists estimate that there are 50×10^{12} cells in the average human. There are approximately 6×10^9 humans in the world. Approximately how many cells do all the humans on the earth have? Write your answer using a power with base 10.

lecture video lecture video lecture video solution video QR code

47

The annual worldwide production of all grains is about 9×10^{12}kg. How much grain is produced per person if there are approximately 6×10^9 people in the world?

lecture video lecture video lecture video solution video QR code

48

How many centimetres in 5 km.

lecture video lecture video lecture video solution video QR code

49

Determine the number of millimetres in 4 m.

lecture video lecture video lecture video solution video QR code

0

Express each of the follow as a power withe a single exponent.

```
\displaystyle (7^3)^5
```

lecture video lecture video lecture video solution video QR code

1

Express each of the following as a power with a single exponent.

```
\displaystyle (3^4)^2
```

lecture video lecture video lecture video solution video QR code

2

Express each of the following as a power with a single exponent.

```
\displaystyle (2^5)^3
```

lecture video lecture video lecture video solution video QR code

3

Express each of the following as a power with a single exponent.
`\displaystyle (10^6)^6`

lecture video lecture video lecture video solution video QR code

4

Express each of the following as a power with a single exponent.
`\displaystyle (10^6)^6`

lecture video lecture video lecture video solution video QR code

5

Express each of the following as a power with a single exponent.
`\displaystyle (5^2)^4`

lecture video lecture video lecture video solution video QR code

6

Express each of the follow as a power withe a single exponent.

```
\displaystyle (x^4)^6
```

lecture video lecture video lecture video solution video QR code

7

Express each of the follow as a power withe a single exponent.

```
\displaystyle (c^3)^2
```

lecture video lecture video lecture video solution video QR code

8

Express each of the following as a power with a single exponent.

```
\displaystyle (x^2)^3
```

lecture video lecture video lecture video solution video QR code

9

Simplify

- **a)** `\displaystyle (y^3)^4`
- **b)** `\displaystyle (m^2)^3`

lecture video lecture video lecture video solution video QR code

10

Simplify

`\displaystyle (c^3)^3`

lecture video lecture video lecture video solution video QR code

11

Simplify

`\displaystyle (n^3)^4`

lecture video lecture video lecture video solution video QR code

12

Simplify

```
\displaystyle (3a^2)^3
```

lecture video lecture video lecture video solution video QR code

13

Simplify

```
\displaystyle (5x^5)^2
```

lecture video lecture video lecture video solution video QR code

14

Simplify

```
\displaystyle (-2m^2)^4
```

lecture video lecture video lecture video solution video QR code

15

Simplify

```
\displaystyle (4^3 p^4)^2
```

lecture video lecture video lecture video solution video QR code

16

Simplify

```
\displaystyle (2y^3)^4
```

lecture video lecture video lecture video solution video QR code

17

Simplify

```
\displaystyle (3x^5)^2
```

lecture video lecture video lecture video solution video QR code

18

Simplify and evaluate each. Use `a=2`, `b=-1`, and `c=4`.

```
\displaystyle (b^3)^2
```

lecture video lecture video lecture video solution video QR code

19

Express each of the following as a power with a prime base

```
\displaystyle 16
```

lecture video lecture video lecture video solution video QR code

20

Express each of the following as a power with a prime base

```
\displaystyle 4^3
```

lecture video lecture video lecture video solution video QR code

21

Express each of the following as a power with a prime base

`\displaystyle 9^4`

lecture video lecture video lecture video solution video QR code

22

Express each of the following as a power with the base indicated.

`(16^2)` with a base of 4

lecture video lecture video lecture video solution video QR code

23

Express each of the following as a power with the base indicated.

`16^2` with a base of 2

lecture video lecture video lecture video solution video QR code

24

Express each of the following as a power with the base indicated.

25^3 with a base of 5

lecture video lecture video lecture video solution video QR code

25

Express each of the following as a power with the base indicated.

27^3 with a base of 3

lecture video lecture video lecture video solution video QR code

26

Write each power in simplified form

4^5 as a power of 2

lecture video lecture video lecture video solution video QR code

27

Write each power in simplified form

`9^6` as a power of 3

lecture video lecture video lecture video solution video QR code

28

Write each power in simplified form

`27^4` as a power of 3

lecture video lecture video lecture video solution video QR code

29

Write each power in simplified form

`(-125)^7` as a power of `(-5)`

lecture video lecture video lecture video solution video QR code

30

Simplify

```
\displaystyle (3^4)(3^5)
```

lecture video lecture video lecture video solution video QR code

31

Simplify

```
\displaystyle \frac{(2^3)^3}{2^4}
```

lecture video lecture video lecture video solution video QR code

32

Simplify

```
\displaystyle \frac{(2^5\times 5^2)^2}{(2^4\times 5)^2}
```

lecture video lecture video lecture video solution video QR code

33

Evaluate.

```
\displaystyle \frac{(2^3)^4}{(2^2)^5}
```

lecture video lecture video lecture video solution video QR code

34

Evaluate.

```
\displaystyle \frac{(5^3)^6}{(5^3)^5}
```

lecture video lecture video lecture video solution video QR code

35

Evaluate.

```
\displaystyle \frac{(6)(2^3)^3}{(2^2)^4}
```

lecture video lecture video lecture video solution video QR code

36

Evaluate.

```
\displaystyle \frac{(5^2)^3 (7^3)^4}{(7^{11})(5^5)}
```

lecture video lecture video lecture video solution video QR code

37

Evaluate.

```
\displaystyle \frac{(5^2)(6^6)}{(5^1)^4 (6^2)^3}
```

lecture video lecture video lecture video solution video QR code

38

Simplify

```
\displaystyle \frac{(5^3\times 5^2)^2}{(5^4\times5)^2}
```

lecture video lecture video lecture video solution video QR code

39

Simplify

```
\displaystyle \frac{(5^5\times 5^2)^2}{(5^4\times 5)^2}
```

lecture video lecture video lecture video solution video QR code

40

Simplify

```
\displaystyle (5^4)^3(5^4)^3
```

lecture video lecture video lecture video solution video QR code

41

Simplify

```
\displaystyle (4^3\times3^2)^2(4^5\times 3^2)^3
```

lecture video lecture video lecture video solution video QR code

42

Simplify

```
\displaystyle \left(\frac{3^4}{3^3}\right)^2
```

lecture video lecture video lecture video solution video QR code

43

Simplify

```
\displaystyle (v^2)^2(v)
```

lecture video lecture video lecture video solution video QR code

44

Simplify

```
\displaystyle (n^4)^3 (n^2)^3
```

lecture video lecture video lecture video solution video QR code

45

Simplify

```
\displaystyle (2x^3)^4(2x^2)^5
```

lecture video lecture video lecture video solution video QR code

46

Simplify

```
\displaystyle \frac{(k^5)^3}{k^2}
```

lecture video lecture video lecture video solution video QR code

47

Simplify

```
\displaystyle \frac{(j^8)^2}{(j^5)^2}
```

lecture video lecture video lecture video solution video QR code

48

Simplify

```
\displaystyle \frac{(j^8)^2}{(j^5)^2}
```

lecture video lecture video lecture video solution video QR code

49

Simplify

```
\displaystyle \frac{(5^3 a^4)^5}{(5^4 a^3)^2}
```

lecture video lecture video lecture video solution video QR code

50

Simplify and evaluate each. Use `a=2`, `b=-1`, and `c=4`.

```
\displaystyle \frac{(c^2)^3}{c^5}
```

lecture video lecture video lecture video solution video QR code

51

Simplify and evaluate each.

$\displaystyle \frac{(x^5)^2(x^7)^3}{(x^4)^6}$ when $x=2$

lecture video lecture video lecture video solution video QR code

52

Simplify

$\displaystyle \left(\frac{y^6}{y^4}\right)^3$

lecture video lecture video lecture video solution video QR code

53

Simplify

$\displaystyle (5a^2 \times 2b^3)^2$

lecture video lecture video lecture video solution video QR code

54

Simplify

```
\displaystyle (3x^4y^2)^3
```

lecture video lecture video lecture video solution video QR code

55

Simplify

```
\displaystyle \frac{(5a^3)^5}{(5a^5 b^2)^2}
```

lecture video lecture video lecture video solution video QR code

56

Simplify

```
\displaystyle (3a^3)^2(3^3 a^5 b^2)^2
```

lecture video lecture video lecture video solution video QR code

57

Without actually computing the values, explain how you know that each expression below is equal to 0.

(a) `(3^2)^6-(3^3)^4`

(b) `(10^2)^8-(10^4)^4`

(c) `(-2^3)^2-(-2^2)^3`

lecture video lecture video lecture video solution video QR code

58

Show that `3^{10}` is the same as `9^5` using your understanding of exponents.

lecture video lecture video lecture video solution video QR code

59

The length of the side of a cube is `3^5`. Express its surface area and volume using powers and simplify.

lecture video lecture video lecture video solution video QR code

60

Determine an expression for the area of the square drawn on the hypotenuse.

lecture video lecture video lecture video solution video QR code

61

Evaluate.

$\displaystyle \frac{[(2^4)^2]^3 }{[(2^2)^3]^2}$

lecture video lecture video lecture video solution video QR code

62

Simplify and evaluate each. Use $a=2$, $b=-1$, and $c=4$.

$\displaystyle \frac{a^5}{a^2}$

lecture video lecture video lecture video solution video QR code

63

Simplify and evaluate each. Use `a=2`, `b=-1`, and `c=4`.

`\displaystyle \frac{a^3 b^3}{ab}`

lecture video lecture video lecture video solution video QR code

64

Simplify and evaluate each.

`\displaystyle \frac{(m)^{11}}{(m^5)^2}+\frac{n^7}{(n^2)^3}` when `m=3` and `n=4`

lecture video lecture video lecture video solution video QR code

65

Determine the value of the exponent that makes each statement true.

`4^3=2^x`

lecture video lecture video lecture video solution video QR code

66

Determine the value of the exponent that makes each statement true.

$6^9=216^x$

lecture video lecture video lecture video solution video QR code

67

Determine the value of the exponent that makes each statement true.

$625^2=25^x$

lecture video lecture video lecture video solution video QR code

68

Determine the value of the exponent that makes each statement true.

$27^4=3^x$

lecture video lecture video lecture video solution video QR code

69

Find the missing value with an integer.

a) `2^8 = 4^\bigcirc`

b) `2^7 = 4^{\bigcirc}`

lecture video lecture video lecture video solution video QR code

0

Express each of the following as a power with single exponent.

a) `\displaystyle (7^3)^5`

b) `\displaystyle (x^4)^6`

c) `\displaystyle (x^3)^2`

lecture video lecture video lecture video solution video QR code

1

Simplify

`\displaystyle (2x^3)^7`

lecture video lecture video lecture video solution video QR code

2

Express each of the following as a power with a different base.

a) `\displaystyle 16`

b) `\displaystyle 4^3`

c) `\displaystyle 9^4`

lecture video lecture video lecture video solution video QR code

3

Express each of the following numbers with the base indicated:

`32^3` with a base of 2

lecture video lecture video lecture video solution video QR code

4

Express each of the following numbers with the base indicated:

`81^2` with a base of 9

lecture video lecture video lecture video solution video QR code

5

Express each of the following numbers with the base indicated:

`81^2` with a base of 3

lecture video lecture video lecture video solution video QR code

6

Express each of the following numbers with the base indicated:

`100^{15}` with a base of 10

lecture video lecture video lecture video solution video QR code

7

Express each of the following as a power with a single exponent.

```
\displaystyle \begin{array}{llllll} &(a) \phantom{.} (3^4)^2 &&(c) \phantom{.} (2^5)^3 &&
(e) \phantom{.} (x^2)^3 \\ &(b) \phantom{.} (9^4)^3 &&(d) \phantom{.} (10^6)^6 &&(f)
\phantom{.} (5^2)^4 \end{array}
```

lecture video lecture video lecture video solution video QR code

8

Simplify

```
\displaystyle [(\frac{8}{5})^3]^4
```

lecture video lecture video lecture video solution video QR code

9

Simplify.

```
\displaystyle 5^35^6
```

lecture video lecture video lecture video solution video QR code

10

Simplify.

```
\displaystyle 7^32^67^22^5
```

lecture video lecture video lecture video solution video QR code

11

Simplify.

```
\displaystyle (3.1)^8(3.1)^2
```

lecture video lecture video lecture video solution video QR code

12

Simplify.

```
\displaystyle (-2)^3(-2)^7
```

lecture video lecture video lecture video solution video QR code

13

Simplify.

```
\displaystyle \frac{5^6}{5^2}
```

lecture video lecture video lecture video solution video QR code

14

Simplify.

```
\displaystyle \frac{(- \frac{2}{5})^{13}}{(- \frac{2}{5})^7}
```

lecture video lecture video lecture video solution video QR code

15

Simplify.

```
\displaystyle \frac{(0.012)^3}{0.012}
```

lecture video lecture video lecture video solution video QR code

16

Simplify.

```
\displaystyle \frac{7^37^6}{7}
```

lecture video lecture video lecture video solution video QR code

17

Simplify.

```
\displaystyle \frac{7^32^6}{7^22^5}
```

lecture video lecture video lecture video solution video QR code

18

Simplify.

```
\displaystyle (\frac{5}{7})^3(\frac{5}{7})^6
```

lecture video lecture video lecture video solution video QR code

19

Simplify.

```
\displaystyle x^2x^6
```

lecture video lecture video lecture video solution video QR code

20

Simplify.

```
\displaystyle y^3y^6
```

lecture video lecture video lecture video solution video QR code

21

Simplify.

```
\displaystyle 2^3x^22^2x^5
```

lecture video lecture video lecture video solution video QR code

22

Simplify.

```
\displaystyle 5^3y^35^3y^6
```

lecture video lecture video lecture video solution video QR code

23

Simplify.

```
\displaystyle \frac{m^6}{m^5}
```

lecture video lecture video lecture video solution video QR code

24

Simplify.

```
\displaystyle \frac{4^4m^6}{4m}
```

lecture video lecture video lecture video solution video QR code

25

Simplify.

```
\displaystyle \frac{n^3n^2}{n}
```

lecture video lecture video lecture video solution video QR code

26

Simplify.

```
\displaystyle ab^7a^3b^4
```

lecture video lecture video lecture video solution video QR code

27

Simplify.

```
\displaystyle \frac{x^5y^6}{x^3y}
```

lecture video lecture video lecture video solution video QR code

28

Simplify.

```
\displaystyle \frac{6^3q^5q^2}{6q^4}
```

lecture video lecture video lecture video solution video QR code

29

The diameter of the Earth is about 1.3 X 104 km. The diameter of the Sun is about `1.4 \times 10^6` km. About how many “Earths” could you line up along the Sun’s diameter?

lecture video lecture video lecture video solution video QR code

30

Simplify

```
\displaystyle (4^3 \times 3^2)^2 \times (4^5 \times 3^2)^3
```

lecture video lecture video lecture video solution video QR code

31

Simplify.

```
\displaystyle (5^3)^5(5^4)^4
```

lecture video lecture video lecture video solution video QR code

32

Simplify

```
\displaystyle \frac{(2^5 \times5^2)^2}{(2^4 \times 5)^2}
```

lecture video lecture video lecture video solution video QR code

33

Simplify.

```
\displaystyle (x^3)^4(x^5)^4
```

lecture video lecture video lecture video solution video QR code

34

Simplify.

```
\displaystyle (m^3)^4(2x^3)^7(m^3)^4(x^3)^7
```

lecture video lecture video lecture video solution video QR code

35

Simplify.

```
\displaystyle \frac{(m^3)^4(2x^2)^7}{2^5(m^3)^3(x^3)^2}
```

lecture video lecture video lecture video solution video QR code

36

The length of the side of a cube is `3^5`. Express its surface area (SA) and volume (V) using powers and simplify.

lecture video lecture video lecture video solution video QR code

37

Express the area of each triangle as a monomial.

lecture video lecture video lecture video solution video QR code

0

Draw an algebra tile representation of each polynomial.

`2x^2 -x`

lecture video lecture video lecture video solution video QR code

1

Draw an algebra tile representation of each polynomial.

`x^2 + 3`

lecture video lecture video lecture video solution video QR code

2

Draw an algebra tile representation of each polynomial.

`2y - 2x + 2`

lecture video lecture video lecture video solution video QR code

3

Copy each equation. Identify the like terms in each and circle their coefficients.

```
\begin{array}{ccccc} &a)& 3x, 4y, -2x &b) & 6m, -1.5m, 4n, 3m^2\\ \end{array}
```

lecture video lecture video lecture video solution video QR code

4

Write an algebraic expression for each algebra tile representation.

lecture video lecture video lecture video solution video QR code

5

Write an algebraic expression for each algebra tile representation.

lecture video lecture video lecture video solution video QR code

6

Write an algebraic expression for each algebra tile representation.

lecture video lecture video lecture video solution video QR code

7

Draw an algebra tile representation of each polynomial.

$\displaystyle x^2 +3x$

lecture video lecture video lecture video solution video QR code

8

Draw an algebra tile representation of each polynomial.

$\displaystyle 2x^2 -y^2$

lecture video lecture video lecture video solution video QR code

9

Draw an algebra tile representation of each polynomial.

```
\displaystyle xy +4x
```

lecture video lecture video lecture video solution video QR code

10

Draw an algebra tile representation of each polynomial.

```
\displaystyle 3x^2 - 3x - 4
```

lecture video lecture video lecture video solution video QR code

11

Write a simplified algebraic expression for each algebra tile representation.

lecture video lecture video lecture video solution video QR code

12

Write a simplified algebraic expression for each algebra tile representation.

lecture video lecture video lecture video solution video QR code

13

Write a simplified algebraic expression for each algebra tile representation.

lecture video lecture video lecture video solution video QR code

14

Write a simplified algebraic expression for each algebra tile representation.

lecture video lecture video lecture video solution video QR code

15

Write a simplified algebraic expression for each algebra tile representation.

lecture video lecture video lecture video solution video QR code

16

Simplify the following.

```
2x + 3x
```

lecture video lecture video lecture video solution video QR code

17

Simplify the following.

```
3y^2 -2y^2 +4y^2
```

lecture video lecture video lecture video solution video QR code

18

Copy each question. Identify the like terms in each and circle the coefficients.

```
\displaystyle -\frac{1}{2}y, -4x, 2\frac{1}{2}y, 6x^2
```

lecture video lecture video lecture video solution video QR code

19

Copy each question. Identify the like terms in each and circle the coefficients.

```
\displaystyle -3.75rs, 3.3r, -5.1s, 4.25rs
```

lecture video lecture video lecture video solution video QR code

20

Simplify the following

```
\displaystyle 7y - 3y -x^2 + 4x^2
```

lecture video lecture video lecture video solution video QR code

21

Simplify the following

```
\displaystyle \frac{3}{4}w^2 -\frac{2}{3}w^2 + \frac{1}{4}w^2 -\frac{4}{3}w^2
```

lecture video lecture video lecture video solution video QR code

22

Simplify the following

```
\displaystyle (2y^2 - 3y + 4) + (-5y^2 + 5y -3)
```

lecture video lecture video lecture video solution video QR code

23

Simplify the following

```
\displaystyle (3y^2 -2y + 1)-(-5y^2 + 2y -3)
```

lecture video lecture video lecture video solution video QR code

24

Simplify the following

```
\displaystyle 2y - 3y -x^2 + 3x^2
```

lecture video lecture video lecture video solution video QR code

25

Simplify the following

```
\displaystyle (y^2 - 2y + 2) - (3y^2 -2y + 3)
```

lecture video lecture video lecture video solution video QR code

26

Determine the polynomials that need to be added to each row of the table.

```
\begin{array}{c|c|c|c|} &\text{Initial Polynomial} & \text{Polynomial To Be Added} &
\text{Final Polynomial} \\ &-7xy + 4x & & -7xy + 3x - 2 \\ \end{array}
```

lecture video lecture video lecture video solution video QR code

27

Determine the polynomials that need to be added to each row of the table.

```
\begin{array}{c|c|c|c|} &\text{Initial Polynomial} & \text{Polynomial To Be Added} &
\text{Final Polynomial} \\ &2x^2 - 3x -4 & & -2x^2 + 3x - 6 \\ \end{array}
```

lecture video lecture video lecture video solution video QR code

28

Simplify.

```
\displaystyle 3xy + 5yz -2xyz + 6xy -xyz
```

lecture video lecture video lecture video solution video QR code

29

Simplify the following.

```
3x -2y + 4x
```

lecture video lecture video lecture video solution video QR code

30

Copy each question. Identify the like terms in each and circle the coefficients.

```
\displaystyle -2g, 3f, -5g
```

lecture video lecture video lecture video solution video QR code

31

Simplify the following

```
\displaystyle (2x - 3y) + (3x +y)
```

lecture video lecture video lecture video solution video QR code

32

Simplify the following

```
\displaystyle (5x -4y) - (3x + 2y)
```

lecture video lecture video lecture video solution video QR code

33

Simplify.

```
\displaystyle 2x + 3y + 4z -4x + 3y -z
```

lecture video lecture video lecture video solution video QR code

34

Simplify the following.

```
(2x + 3) + (5x -4)
```

lecture video lecture video lecture video solution video QR code

35

Simplify the following.

```
(3x - 5) + (-2x + 6)
```

lecture video lecture video lecture video solution video QR code

36

Simplify the following.

```
(3x + 2) - (5x + 2)
```

lecture video lecture video lecture video solution video QR code

37

Simplify.

```
\displaystyle (2x + 3y) + (5x - 4y) + (2x -y)
```

lecture video lecture video lecture video solution video QR code

38

Copy each question. Identify the like terms in each and circle the coefficients.

```
\displaystyle 5x, -2.1y^3, -0.8y^3, 2y
```

lecture video lecture video lecture video solution video QR code

39

Simplify the following

```
\displaystyle 3h + 1 + 2h + 5
```

lecture video lecture video lecture video solution video QR code

40

Simplify the following

```
\displaystyle \frac{3}{4}a -\frac{1}{5}b -\frac{1}{4}a + \frac{2}{5}b
```

lecture video lecture video lecture video solution video QR code

41

Simplify the following

```
\displaystyle (3x^2 - 4xy + 6y^2) + (6x^2 -8xy -3y^2)
```

lecture video lecture video lecture video solution video QR code

42

Simplify the following

```
\displaystyle (3x^2 -4xy + 6y^2)-(6x^2 -8xy - 3y^2)
```

lecture video lecture video lecture video solution video QR code

43

Simplify.

```
\displaystyle -(4ab - 3a) - (6ab -4a) + (2ab + 6a)
```

lecture video lecture video lecture video solution video QR code

44

Simplify.

```
(3xy + 5y^2) - (3xy + 5y^2) + (3xy + 5y^2)
```

lecture video lecture video lecture video solution video QR code

45

Determine the polynomials that need to be added to each row of the table.

```
\begin{array}{c|c|c|c|} &\text{Initial Polynomial} & \text{Polynomial To Be Added} &
\text{Final Polynomial} \\ &x^2 + 3x & & -x^2 + 5x \\ \end{array}
```

lecture video lecture video lecture video solution video QR code

46

Determine the polynomials that need to be added to each row of the table.

```
\begin{array}{c|c|c|c|} &\text{Initial Polynomial} & \text{Polynomial To Be Added} &
\text{Final Polynomial} \\ &2x^2y^2 -4y^2 & & 5x^2y^2 - 3y^2 \end{array}
```

lecture video lecture video lecture video solution video QR code

47

Simplify.

```
\displaystyle -4abc - 3ab -6abc - 4ab
```

lecture video lecture video lecture video solution video QR code

48

A pool table is always twice as long as it is wide. The Cue Ball Company makes pool tables in may different sizes. Each table top must have rubber bumpers around the outside edge and a felt top. The rubber bumpers cost $2.25/m and the felt material for the top costs $`28/m^2`. Determine an algebraic expression that represents the total cost for feet and rubber for the table top. Use this to determine the cost of the materials for a top that has a width of 1.5m.

lecture video lecture video lecture video solution video QR code

49

Jan is a plumber. She charges $35 to visit a job site. Her hourly rate is $43.50. Fred repairs furnaces. He charges $41 for a service call plus $38.75/h. Let `x` represent the number of hours they work.

- **a)** Represent Jan's bill as a polynomial.
- **b)** Represent Fred's bill as a polynomial.
- **c)** Write a new polynomial that represents Jan's and Fred's combined charge, assuming that they both work x hours at a site.
- **d)** Calculate their combined charge i they both work 8 h at the same complex.

lecture video lecture video lecture video solution video QR code

50

Write a algebra expression for how much

a) How much does Elizabeth and Dragan make in total for t tables served.

b) How much does Elizabeth and Dragan make in total for 5 tables served.

```
\displaystyle \begin{array}{|l|l|l|} \hline & Elizabeth & Dragan \\ \hline \text{Average Weekly Tips} & \$ 220 / table & \$ 160 / table \\ \hline \text{Room and Board} & \$ 160 / week & \$ 125 / week \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

51

Simplify.

```
\displaystyle (3xy + 5y^2) - (3xy + 5y^2) + (3xy + 5y^2)
```

lecture video lecture video lecture video solution video QR code

0

State the factors and product represented in each model as an algebraic equation.

lecture video lecture video lecture video solution video QR code

1

State the factors and product represented in each model as an algebraic equation.

lecture video lecture video lecture video solution video QR code

2

What multiplication equation does each model represent?

lecture video lecture video lecture video solution video QR code

3

Expand.

```
\displaystyle 2a^3(4a^2 -a)
```

lecture video lecture video lecture video solution video QR code

4

Expand using the tool or strategy of your choice.

```
\displaystyle (3x +5)(2x)
```

lecture video lecture video lecture video solution video QR code

5

Expand.

```
\displaystyle b^2(2b^3-4b + 1)
```

lecture video lecture video lecture video solution video QR code

6

Expand.

```
\displaystyle -4x(x^2-3x)
```

lecture video lecture video lecture video solution video QR code

7

Expand.

```
\displaystyle -2n^2(3n - 5+ 4n^3)
```

lecture video lecture video lecture video solution video QR code

8

Find the missing value.

```
\displaystyle -4a^3(\bigcirc + \bigcirc + \bigcirc) = -12a^7 + 4a^4 - 8a^3
```

lecture video lecture video lecture video solution video QR code

9

Evaluate each statement for `p = 5` once before you expand and once after you expand it.

```
2p^2(4p + 3)
```

lecture video lecture video lecture video solution video QR code

10

Expand.

```
\displaystyle -3x(xy + yz)
```

lecture video lecture video lecture video solution video QR code

11

Expand.

```
\displaystyle -2(y^2 - y -1)
```

lecture video lecture video lecture video solution video QR code

12

Expand.

```
\displaystyle 2(-y^2 - y - 1)
```

lecture video lecture video lecture video solution video QR code

13

Expand using the tool or strategy of your choice.

```
\displaystyle 2(3x +4)
```

lecture video lecture video lecture video solution video QR code

14

Expand using the tool or strategy of your choice.

```
\displaystyle 4(5 + x)
```

lecture video lecture video lecture video solution video QR code

15

Evaluate each statement for `p = 5` once before you expand and once after you expand it.

```
4(3p + 2)
```

lecture video lecture video lecture video solution video QR code

16

Expand using the tool or strategy of your choice.

```
\displaystyle 3x(x + 2)
```

lecture video lecture video lecture video solution video QR code

17

Find the missing value.

```
\displaystyle \bigcirc (2x - 10) = 6x - 30
```

lecture video lecture video lecture video solution video QR code

18

Evaluate each statement for `p = 5` once before you expand and once after you expand it.

`3p(6 - p)`

lecture video lecture video lecture video solution video QR code

19

Expand using the tool or strategy of your choice.

`\displaystyle x(2x + 1)`

lecture video lecture video lecture video solution video QR code

20

What multiplication equation does each model represent?

lecture video lecture video lecture video solution video QR code

21

What multiplication equation does each model represent?

lecture video lecture video lecture video solution video QR code

22

Write simplified algebraic expressions for the perimeter, P, and area, A, of the following figures.

lecture video lecture video lecture video solution video QR code

23

Write simplified algebraic expressions for the perimeter, P, and area, A, of the following figures.

lecture video lecture video lecture video solution video QR code

24

Evaluate the perimeter and the area of the rectangle if `x = 4cm`

lecture video lecture video lecture video solution video QR code

25

Expand.

```
\displaystyle 3m^3(5m^2+ 6m -4)
```

lecture video lecture video lecture video solution video QR code

26

Find the missing value.

```
\displaystyle \bigcirc(x^3 -5x -4) = 2x^5 - 10x^3 - 8x^2
```

lecture video lecture video lecture video solution video QR code

27

Evaluate each statement for `p = 5` once before you expand and once after you expand it.

`p(3p^2-4p + 4)`

lecture video lecture video lecture video solution video QR code

28

Expand.

`\displaystyle -(x^2 -3x + 7)`

lecture video lecture video lecture video solution video QR code

29

Write simplified algebraic expressions for the perimeter, `P`, and area, `A`, of the following figures.

lecture video lecture video lecture video solution video QR code

30

Expand.

```
\displaystyle 2x(y - 3z)
```

lecture video lecture video lecture video solution video QR code

31

Fill in the missing information to make the statements true.

```
\displaystyle 20x + 15 = 5(\bigcirc + \bigcirc)
```

lecture video lecture video lecture video solution video QR code

32

Fill in the missing information to make the statements true.

```
\displaystyle 5x^2 + 25x = 5(\bigcirc + \bigcirc)
```

lecture video lecture video lecture video solution video QR code

33

Factor the following expressions fully.

```
12 x^2 - 6x
```

lecture video lecture video lecture video solution video QR code

34

Fill in the missing information to make the statements true.

```
\displaystyle 4x^5 + 8x^3 -2x^2 = \bigcirc x^2(\bigcirc + \bigcirc +\bigcirc)
```

lecture video lecture video lecture video solution video QR code

35

These polynomials were expanded using the distributive principle. Which of the following is the equivalent factored form?

```
21y^3 + 7y^2 - 14y
```

lecture video lecture video lecture video solution video QR code

0

Simplify using the tool or strategy of your choice. Verify using a different tool or strategy.

```
\displaystyle 3(x-1)+2(2x+2)
```

lecture video lecture video lecture video solution video QR code

1

Simplify.

```
\displaystyle 3(x-1)+2(2x+2)
```

lecture video lecture video lecture video solution video QR code

2

Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

```
6(8+3c)+4(10+2c)
```

lecture video lecture video lecture video solution video QR code

3

Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

`5(2x-3)-4(3x+6)`

lecture video lecture video lecture video solution video QR code

4

Simplify each expression, and then evaluate for `a=3`.

`6(2a+4) -3a`

lecture video lecture video lecture video solution video QR code

5

Simplify each expression, and then evaluate for `a=3`.

`15-2(a-5)`

lecture video lecture video lecture video solution video QR code

6

Simplify the following polynomial expressions.

```
6(x+5)-2(x+4)+3(x-5)
```

lecture video lecture video lecture video solution video QR code

7

Expand and simplify.

```
\displaystyle -1.25(3.1m+2.2)-2.15(1.2m-3.2)
```

lecture video lecture video lecture video solution video QR code

8

Simplify

```
15-10(x-4)-(3x+3)
```

lecture video lecture video lecture video solution video QR code

9

Simplify the following.

```
5(2x-3y)-4(3x+6y)
```

lecture video lecture video lecture video solution video QR code

10

Simplify using the tool or strategy of your choice. Verify using a different tool or strategy.

```
\displaystyle 2(y^2-3)-2(y^2-1)
```

lecture video lecture video lecture video solution video QR code

11

Simplify.

```
\displaystyle 2(y^2-3)-2(y^2-1)
```

lecture video lecture video lecture video solution video QR code

12

Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

```
2(x^2-3x+6)-3(2x^2-4x-1)
```

lecture video lecture video lecture video solution video QR code

13

Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

```
2(3y^2+4y)-3(2y^2-y)
```

lecture video lecture video lecture video solution video QR code

14

Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

```
2(4x^3-3x+6)+3(2x^5+x^3-4x)
```

lecture video lecture video lecture video solution video QR code

15

Simplify the following polynomial expressions.

```
3(2x^2-1)+6(2x-3)-(2x^2-5x)
```

lecture video lecture video lecture video solution video QR code

16

Simplify the following polynomial expressions.

```
3(2y^2-1)+6(2y-3)-(2y^2-5y)
```

lecture video lecture video lecture video solution video QR code

17

Simplify the following polynomial expressions.

```
3(4p^2-2p+6)+6(4p-2)-(7p^2+5p+1)
```

lecture video lecture video lecture video solution video QR code

18

Simplify the following.

```
2(x^2-3xy+6y)-3(2x^2-4xy-y)
```

lecture video lecture video lecture video solution video QR code

19

On average, the following numbers of adults and children pay to enter the fall fair.

Determine an expression for the total entrance fees collected la hours after opening.

```
\displaystyle \begin{array}{|l|c|c|} \hline & Adults & Children \\ \hline At 9 a.m. & 20 & 25 \\ \hline \text{Each Hour After 9 a.m. Until Closing} & 95 & 120 \\ \hline \end{array}
```

FALL FAIR 9 a.m. `\displaystyle -10` p.m. Children: `\displaystyle \$ 8.00` Adults: `\displaystyle \$ 12.00`

lecture video lecture video lecture video solution video QR code

20

Write an algebraic representation that corresponds to the algebra tile model shown. Simplify the expression using the strategy of your choice.

lecture video lecture video lecture video solution video QR code

21

Write an algebraic representation that corresponds to the algebra tile model shown. Simplify the expression using the strategy of your choice.

lecture video lecture video lecture video solution video QR code

22

Write an algebraic representation that corresponds to the algebra tile model shown. Simplify the expression using the strategy of your choice.

lecture video lecture video lecture video solution video QR code

23

Mary is making rectangular picture frames to the proportions shown.

Determine the outside perimeter when $x=5$cm.

lecture video lecture video lecture video solution video QR code

24

Mary is making rectangular picture frames to the proportions shown.

Determine a simplified expression for the area of one picture frame.

lecture video lecture video lecture video solution video QR code

25

Mary is making rectangular picture frames to the proportions shown.

Determine the area of one frame when $x=5$ cm.

lecture video lecture video lecture video solution video QR code

26

Mary is making rectangular picture frames to the proportions shown.

Determine a simplified expression for the number of square centimeters of wood needed to make 20 frames the same size. Assume there is no waste.

lecture video lecture video lecture video solution video QR code

27

Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

$-y(y^2+5y+4)+3y(2y^2-y+6)$

lecture video lecture video lecture video solution video QR code

28

Simplify the following polynomial expressions.

$4x^2(x^3-2x^2)+2x^3(2x^2+2x)$

lecture video lecture video lecture video solution video QR code

29

Simplify the following polynomial expressions.

$2y^2(y^3-3y^5)-3(y^2-y^5)$

lecture video lecture video lecture video solution video QR code

30

Simplify the following polynomial expressions.

$3m^3(2m^2-5m+3)-4m(m^4+2m^3-m^2)$

lecture video lecture video lecture video solution video QR code

31

Simplify the following polynomial expressions.

$-5x(x^3-2x^2)+2x^2(3x^2-5x)-4x^3(x-2)$

lecture video lecture video lecture video solution video QR code

32

Simplify the following.

$x(x+y)+2x(x-y)$

lecture video lecture video lecture video solution video QR code

33

Simplify each expression, and then evaluate for `a=3`.

`-10a-2(a^2+7)`

lecture video lecture video lecture video solution video QR code

34

Simplify each expression, and then evaluate for `a=3`.

`-(2a-a^3)-a^2`

lecture video lecture video lecture video solution video QR code

35

Expand and simplify.

```
\displaystyle \frac{3}{5}\left(2\frac{1}{3}a-2\frac{1}{2}\right)-\frac{1}
{2}\left(2\frac{1}{5}a+3\frac{2}{3}\right)
```

lecture video lecture video lecture video solution video QR code

36

Expand and simplify.

```
\displaystyle \frac{1}{6}\left(3\frac{1}{5}a+\frac{2}{3}b\right)+\frac{1}
{3}\left(\frac{1}{2}a-\frac{1}{2}\right)
```

lecture video lecture video lecture video solution video QR code

37

Mary is making rectangular picture frames to the proportions shown.

Determine a simplified expression for the outside perimeter of the frame.

lecture video lecture video lecture video solution video QR code

38

Apply the distributive property to simplify the following.

```
(x+3)(2x+4)
```

lecture video lecture video lecture video solution video QR code

39

Apply the distributive property to simplify the following.

```
(y+2)(y+1)
```

lecture video lecture video lecture video solution video QR code

40

Apply the distributive property to simplify the following.

```
(2x+y)(x+y)
```

lecture video lecture video lecture video solution video QR code

41

Simplify

```
\displaystyle (x-3)(x+4)+3(x^2-x+2)
```

lecture video lecture video lecture video solution video QR code

42

Simplify

```
\displaystyle (2x+y)(x-y)-(x^2+y^2)
```

lecture video lecture video lecture video solution video QR code

43

Simplify

```
\displaystyle (3x+5)(2x-4)+(x+1)(2x+5)
```

lecture video lecture video lecture video solution video QR code

0

Sketch models to represent each of the following algebraic expressions. The variables `x` and `y` are not equal.

```
\displaystyle y^2
```

lecture video lecture video lecture video solution video QR code

1

Sketch models to represent each of the following algebraic expressions. The variables `x` and `y` are not equal.

```
\displaystyle y^3
```

lecture video lecture video lecture video solution video QR code

2

Sketch models to represent each of the following algebraic expressions. The variables `x` and `y` are not equal.

```
\displaystyle 2x
```

lecture video lecture video lecture video solution video QR code

3

Sketch models to represent each of the following algebraic expressions. The variables `x` and `y` are not equal.

`\displaystyle (2x)^2`

lecture video lecture video lecture video solution video QR code

4

Rob is finishing a floor with square tiles. Each tile has an area of `412 cm^2`. Estimate the length of the side of each tile.

lecture video lecture video lecture video solution video QR code

5

If you know that the product of two numbers is `9^6` and quotient is `9^2`, which of the following could be the two numbers?

lecture video lecture video lecture video solution video QR code

6

The length of the side of a cube is `5^3`. Express its surface area (SA) and volume (V) using powers and simplify each expression.

lecture video lecture video lecture video solution video QR code

7

Why do you get the same result for each of the following expressions? Show your work using Exponent Laws.

(a) `\displaystyle \frac{5^7}{5^4}`

(b) `\displaystyle \frac{5^6}{5^3}`

(c) `\displaystyle\frac{(5^4)(5^5)}{5^6}`

(d) `\displaystyle\frac{(5^4)(5)}{(5)(5)}`

lecture video lecture video lecture video solution video QR code

8

Simplify, and then evaluate for `x = -2` and `y = 3`

`\displaystyle \frac{(x^3)(x^4)}{x^6}`

lecture video lecture video lecture video solution video QR code

9

Simplify, and then evaluate for `x = -2` and `y = 3`

`\displaystyle \frac{(y^6)(x^4)}{(x^2)(y^4)}`

lecture video lecture video lecture video solution video QR code

10

Simplify, and then evaluate for `x = -2` and `y = 3`

`\displaystyle \frac{-32x^6}{16x^3}`

lecture video lecture video lecture video solution video QR code

11

About how long does it take for light to travel from one end of our galaxy to the other?

- It is about `9.5 \times 10^6 km` from one end of our galaxy to the other.
- Light travels at about `1.1 \times 10^9 km/h`.

lecture video lecture video lecture video solution video QR code

12

Simplify.

```
\displaystyle (a^3)^2
```

lecture video lecture video lecture video solution video QR code

13

Simplify.

```
\displaystyle (4x^3)^4
```

lecture video lecture video lecture video solution video QR code

14

Simplify.

```
\displaystyle \frac{(2^3y^4)^3}{(2^4y^3)^2}
```

lecture video lecture video lecture video solution video QR code

15

Which of the following is equal to `0`?

- a) `(10^3)^5 -(10^5)^3`
- b) `(9^2)^2-(3^4)^2`

lecture video lecture video lecture video solution video QR code

16

Express each of the following as a power with a prime base.

`8^3`

lecture video lecture video lecture video solution video QR code

17

Express each of the following as a power with a prime base.

`25^4`

lecture video lecture video lecture video solution video QR code

18

Express each of the following as a power with a prime base.

```
9^3
```

lecture video lecture video lecture video solution video QR code

19

Simplify.

```
\displaystyle 5y -4y
```

lecture video lecture video lecture video solution video QR code

20

Simplify.

```
\displaystyle \frac{4}{5}a - \frac{1}{5}a
```

lecture video lecture video lecture video solution video QR code

21

Simplify.

```
\displaystyle 3xy^2 + 3xy^2
```

lecture video lecture video lecture video solution video QR code

22

Simplify.

```
\displaystyle 2x^2 - 5x + 5x^2 -x
```

lecture video lecture video lecture video solution video QR code

23

Simplify.

```
\displaystyle y^2 + 5xy + y^2 - xy
```

lecture video lecture video lecture video solution video QR code

24

Simplify.

```
\displaystyle 2\frac{1}{2}a + \frac{2}{3}b + \frac{1}{2}a-\frac{1}{3}b
```

lecture video lecture video lecture video solution video QR code

25

Simplify.

```
\displaystyle -1.75m + 2.7 -2.25m + 2.3
```

lecture video lecture video lecture video solution video QR code

26

Expand. check one of your answer using a different tool or strategy.

```
3(y - 2)
```

lecture video lecture video lecture video solution video QR code

27

Expand. check one of your answer using a different tool or strategy.

```
x(2x+ 4)
```

lecture video lecture video lecture video solution video QR code

28

Expand.

```
-1.5m(2.8m + 2.2)
```

lecture video lecture video lecture video solution video QR code

29

Expand. check one of your answer using a different tool or strategy.

```
5m(3m^3 + 2n)
```

lecture video lecture video lecture video solution video QR code

30

Expand. check one of your answer using a different tool or strategy.

$-3x(x^2 -x)$

lecture video lecture video lecture video solution video QR code

31

Expand. check one of your answer using a different tool or strategy.

$2y^3(y^3 + 3y^2 - y)$

lecture video lecture video lecture video solution video QR code

32

Expand. check one of your answer using a different tool or strategy.

$-a^2(2a -5a^2+4a^3)$

lecture video lecture video lecture video solution video QR code

33

Expand.

```
\displaystyle \frac{1}{3}(3x +12)
```

lecture video lecture video lecture video solution video QR code

34

Expand and simplify. Check one of your answers using a different tool or strategy.

```
2(x - 3) + 3(x + 2)
```

lecture video lecture video lecture video solution video QR code

35

Expand.

```
\displaystyle \frac{2}{5}(\frac{5}{8}a +10b)
```

lecture video lecture video lecture video solution video QR code

36

Expand and simplify.

```
\displaystyle \frac{1}{4}(8x - 12) -\frac{1}{2}(6 - 14x)
```

lecture video lecture video lecture video solution video QR code

37

Expand and simplify.

```
\displaystyle \frac{5}{6}(6x - 18y) +\frac{2}{3}(21x - 6y)
```

lecture video lecture video lecture video solution video QR code

38

Expand and simplify.

```
\displaystyle \frac{5}{6}(6x - 18y) +\frac{2}{3}(21x - 6y)
```

lecture video lecture video lecture video solution video QR code

39

Rick runs a pet store and is building rectangular pens for the animals. The length of the pens is always 20 cm longer than the width.

(a) One way of determining the perimeter is to use `P = 2(l + w)`. Use this formula to create an expression for the perimeter in terms of x.

(b) Simplify your formula in part (a).

lecture video lecture video lecture video solution video QR code

40

Rick runs a pet store and is building rectangular pens for the animals. The length of the pens is always 20 cm longer than the width.

- Find the perimeter of a pen with a width of 45 cm.

lecture video lecture video lecture video solution video QR code

41

Ms. Smith needs fabric pieces for an art project for her students. The pieces will be cut to two rectangular sizes, as shown.

Determine a simplified expression for the area of fabric needed if 14 students choose the larger size and 12 choose the smaller size.

lecture video lecture video lecture video solution video QR code

42

Ms. Smith needs fabric pieces for an art project for her students. The pieces will be cut to two rectangular sizes, as shown.

The class decides that the width of each piece of fabric will be 20 cm. Use your answer from part a) to determine how much material will be needed.

lecture video lecture video lecture video solution video QR code

43

Expand and simplify. Check one of your answers using a different tool or strategy.

```
3(y^2 + y-2)-(y^2+2y+4)
```

lecture video lecture video lecture video solution video QR code

44

Expand and simplify. Check one of your answers using a different tool or strategy.

```
2x(3x - 2) + x^2 + 2(x^2+3)
```

lecture video lecture video lecture video solution video QR code

45

Expand and simplify. Check one of your answers using a different tool or strategy.

```
3x(4x^2-5x) + x^3 -x^2
```

lecture video lecture video lecture video solution video QR code

46

Mike has a baseball card collection. He is wondering about the future value of his rookie and big star cards.

Write an expression that represents the combined value of these cards in y years.

```
\displaystyle \begin{array}{|l|c|c|c|} \hline Card Type & Number of Cards & Value Today &
Increase in Value per Year \\ \hline Rookie cards & 22 & \$ 15 & \$ 3 \\ \hline Big star
cards & 18 & \$ 12 & \$ 2 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

47

Mike has a baseball card collection. He is wondering about the future value of his rookie and big star cards.

Determine the combined value of the cards in 6 years.

```
\displaystyle \begin{array}{|l|c|c|c|} \hline Card Type & Number of Cards & Value Today &
Increase in Value per Year \\ \hline Rookie cards & 22 & \$ 15 & \$ 3 \\ \hline Big star
cards & 18 & \$ 12 & \$ 2 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

0

Sketch and label a representation for each of the following algebraic terms. Explain how your sketches are both alike and different.

a) y^2

b) m

c) m^3

lecture video lecture video lecture video solution video QR code

1

Jacqueline is making a quilt using finished squares like the one shown. Each square has an area of 310 cm^2.

a) Write an expression that represents the length of the side of the square in terms of its area.

b) Estimate the length. Describe the process you used.

c) Use a calculator to determine the correct length to two decimal places.

lecture video lecture video lecture video solution video QR code

2

Determine the approximate length of the roadway bordering the adjacent square properties.

lecture video lecture video lecture video solution video QR code

3

Simplify

```
\displaystyle 3^43^6
```

lecture video lecture video lecture video solution video QR code

4

Simplify

```
\displaystyle \frac{(\frac{4}{5})^6}{(\frac{4}{5})^5}
```

lecture video lecture video lecture video solution video QR code

5

Simplify

```
\displaystyle \frac{x^3x^6}{x}
```

lecture video lecture video lecture video solution video QR code

6

Simplify

```
\displaystyle 6.1 (6.1^6)(6.1^5)(5^2)
```

lecture video lecture video lecture video solution video QR code

7

Simplify

```
\displaystyle (-7)^4(-7^6)
```

lecture video lecture video lecture video solution video QR code

8

Simplify

a) `\displaystyle (6^3)^2`

b) `\displaystyle (x^2)^5`

lecture video lecture video lecture video solution video QR code

9

Simplify

```
\displaystyle (5x^4)^5
```

lecture video lecture video lecture video solution video QR code

10

Simplify

```
\displaystyle [(\frac{2}{5})^4]^5
```

lecture video lecture video lecture video solution video QR code

11

Simplify

```
\displaystyle (y^3)^2(y^5)^2
```

lecture video lecture video lecture video solution video QR code

12

Simplify

```
\displaystyle (\frac{2}{x^2})^2
```

lecture video lecture video lecture video solution video QR code

13

Simplify.

```
\displaystyle 5x - 2x
```

lecture video lecture video lecture video solution video QR code

14

Simplify.

```
\displaystyle 7xy + 2xy
```

lecture video lecture video lecture video solution video QR code

15

Simplify.

`\displaystyle (3x^2 -5a) + (4x^2 -a)`

lecture video lecture video lecture video solution video QR code

16

Which expression below is equivalent to `\displaystyle (y^2 + 5y) -(3y^2 -y)` ?

A `-2y^2 + 6y`

B `4y^2 + 4y`

C `2y^2 + 6y`

D `-2y^2 + 6y`

E none of the above

lecture video lecture video lecture video solution video QR code

17

Expand.

`\displaystyle 2(x -3)`

lecture video lecture video lecture video solution video QR code

18

Expand.

```
\displaystyle 3x(4x^2 -5x)
```

lecture video lecture video lecture video solution video QR code

19

Expand.

```
\displaystyle y^5(5y^4 + 3y^3 -y^2)
```

lecture video lecture video lecture video solution video QR code

20

Expand and simplify.

```
\displaystyle 2(x -3) + 3(x + 2)
```

lecture video lecture video lecture video solution video QR code

21

Expand and simplify.

```
\displaystyle 3(y^2 + y -2) - (y^2 + 2y + 4)
```

lecture video lecture video lecture video solution video QR code

22

Expand and simplify.

```
\displaystyle 2x(3x -2) + x^2 + 0.2(x^2 + 3)
```

lecture video lecture video lecture video solution video QR code

23

Mary and Bill are setting up a summer concession stand at the park. They need these jobs filled:

```
\displaystyle \begin{array}{|l|c|l|} \hline Position & \text{Number of Positions} &
\text{Hourly Pay Rate and Weekly Bonus} \\ \hline Manager & 3 & \$ 14 / \mathrm{h} \text{
plus } \$ 50 \text{bonus per week for working at least 30 } \mathrm{~h} per week \\
\hline Server & 8 & \$ 9 / \mathrm{h} \text{ plus } \$ 35 \text{bonus per week for
working at least } 30 \mathrm{~h} per week \\ \hline \end{array}
```

a) Determine a simplified algebraic expression to represent the weekly payroll for all 11 employees. Assume that they will always work at least 30 h per week.

b) Use your expression to determine the weekly payroll if each employee works 32 h per week.

lecture video lecture video lecture video solution video QR code

24

Determine an expression that simplifies to `3x^2` if the expression contains:

- exactly two binomials
- the distributive property used once

lecture video lecture video lecture video solution video QR code

Chapter 3 Linear Relations

0

Describe a relation between the figure number and the total number of squares using a table of values, a graph, and an equation.

lecture video lecture video lecture video solution video QR code

1

Describe each relation with either a table of values or an equation.

lecture video lecture video lecture video solution video QR code

2

This pattern is made of equilateral triangles with sides of 1 cm.

- Graph the relation between a figure and its perimeter.
- Determine the perimeter of figure 10. Explain your reasoning.
- Graph the relation between number and the number of white triangles in the figure.
- Determine the numbers of white triangles in figure 10. Explain.

lecture video lecture video lecture video solution video QR code

3

Describe each relation using a table of values or an equation.

- **(a)** The perimeter of an equilateral triangle in terms of its side length
- **(b)** The amount John pays for a taxi ride, if the fare is `\$0.50/km` plus a flat rate of `\$2.50`

lecture video lecture video lecture video solution video QR code

4

Graph each relation.

```
\displaystyle \begin{array}{|c|c|} \hline Time (min) & Distance (km) \\ \hline 0 & 15 \\
\hline 5 & 18 \\ \hline 10 & 21 \\ \hline 15 & 24 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

5

Graph each relation.

```
\displaystyle \begin{array}{|c|c|} \hline Side Length (\mathrm{cm}) & Area
\left(\mathrm{cm}^{2}\right) \\ \hline 1 & 1 \\ \hline 2 & 4 \\ \hline 3 & 9 \\ \hline 4
& 16 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

6

Graph each relation.

```
\displaystyle \begin{array}{|c|c|} \hline x & y \\ \hline -2 & -4 \\ \hline -1 & -2 \\
\hline 0 & 0 \\ \hline 1 & 2 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

7

Describe each relation using an equation.

```
\displaystyle \begin{array}{|c|c|} \hline Time (min) & Distance (km) \\ \hline 0 & 15 \\
\hline 5 & 18 \\ \hline 10 & 21 \\ \hline 15 & 24 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

8

Describe each relation using an equation.

```
\displaystyle \begin{array}{|c|c|} \hline x & y \\ \hline -2 & -4 \\ \hline -1 & -2 \\
\hline 0 & 0 \\ \hline 1 & 2 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

9

Elyse is training for a race. The table shows her times and distances.

```
\displaystyle \begin{array}{|c|c|} \hline Time (\mathrm{min}) & Distance (\mathrm{km}) \\
\hline 0 & 0 \\ \hline 10 & 2 \\ \hline 20 & 4 \\ \hline 30 & 6 \\ \hline \end{array}
```

- **(a)** Which variable is independent and which is dependent?
- **(b)** Estimate the distance Elyse has run after 22 min.
- **(c)** Describe the relation using a graph.
- **(d)** Verify your estimate in part (b)

lecture video lecture video lecture video solution video QR code

10

Describe each relation with either a table of values or an equation.

lecture video lecture video lecture video solution video QR code

11

The relation between Celsius and Fahrenheit is `\displaystyle C=\frac{5}{9}(F-32)`.

- Which variable is independent in this equation? Justify your choice.
- Describe the relation using a table of values.
- Graph the relation.
- Are the data continuous or discrete?
- Estimate the Celsius temperature when `F=100` using your graph.
- Calculate the Celsius temperature when `F=100` using the equation.
- Why might you predict a value using an equation, instead or a table?

lecture video lecture video lecture video solution video QR code

12

These ordered pairs show the relation between the amount of cell phone use in minutes and the cost, in dollars: (0,25), (10, 26), (20, 27)

- Explain why cost is the dependent variable and what the ordered pair (0,25) means.
- Graph the relation.
- Are the data continuous or discrete?
- Describe the relation using an equation.
- Would you predict the cost of 100 min using a graph, or using an equation? Explain.
- Predict the cost of 100 min.

lecture video lecture video lecture video solution video QR code

13

Antwan charges `\$5/h`, plus a flat fee of `\$8`, in his lawn-mowing business.

a) Describe the relation between earning and hours using an equation.

b) Justify your choice for independent and dependent variables.

lecture video lecture video lecture video solution video QR code

14

A van's gas tank holds 75 L. The van uses 0.125L/km.

a) Describe the relation between the distance the van travels and the volume of gas in its tank.

b) How far can the van travel on a full tank of gas?

lecture video lecture video lecture video solution video QR code

15

Is the point on the graph of `y=5x`?

`(0,0)`

lecture video lecture video lecture video solution video QR code

16

Is the point on the graph of `y=5x`?

`(2,10)`

lecture video lecture video lecture video solution video QR code

17

Represent each relation using a table of values and a graph.

`y = x`

lecture video lecture video lecture video solution video QR code

18

Represent each relation using a table of values and a graph.

$y = 2x + 3$

lecture video lecture video lecture video solution video QR code

19

Represent each relation using a table of values and a graph.

$y = -x + 1$

lecture video lecture video lecture video solution video QR code

20

Represent each relation using a table of values and a graph.

$y = 0.25x - 3.5$

lecture video lecture video lecture video solution video QR code

21

Represent each relation using a table of values and a graph.

$y = -\frac{1}{2}x$

lecture video lecture video lecture video solution video QR code

22

Represent each relation using a table of values and a graph.

$\displaystyle y = -\frac{2}{3}x + \frac{1}{6}$

lecture video lecture video lecture video solution video QR code

23

Claire has $50 in her piggy bank. She takes $2.50 from it each week to buy a hot chocolate a banana from the cafeteria. Create a table of values, a graph, and an equation to describe the amount of money in the piggy bank each week.

lecture video lecture video lecture video solution video QR code

24

Describe each relation in words.

`I=2.54c`, where `I` is inches and `c` in centimetres

lecture video lecture video lecture video solution video QR code

25

Describe each relation in words.

`\displaystyle{F=\frac{9}{5}C+32}`, where `F` is degrees Fahrenheit and `C` is degrees Celsius

lecture video lecture video lecture video solution video QR code

26

Describe each relation in words.

`\displaystyle{k=\frac{p}{2.2}}`, where `p` is pounds and `k` is kilograms

lecture video lecture video lecture video solution video QR code

27

Describe each relation in words.

`K=C+273`, where `K` is degrees Kelvin and `C` is degrees Celsius

lecture video lecture video lecture video solution video QR code

28

a) Graph `y=2x + 2`, `y=3x`, and `y=3x - 1` on the same axes.

b) How do the equations tell you whether the graph will pass through the origin?

lecture video lecture video lecture video solution video QR code

0

Identify each relation as a direct or a partial variation. Support your answer using a table, a graph, and form of the equation.

a) `y = 2x`

b) `y = 2x + 3`

c) `y = 1 -x`

d) `y = 0.25x - 3.5`

e) `y = -\frac{1}{2}x`

f) `y = -\frac{2}{3}x + \frac{1}{6}`

lecture video lecture video lecture video solution video QR code

1

Students can choose from two different cafeteria milk plans.

Plan A: Pay `\$0.75` per glass of milk

Plan B: Pay `\$10`, plus `\$0.25` per glass of milk

a) Write an equation for each plan.

b) Determine the cost of 20 glasses for each plan.

c) Determine the cost of 30 glasses for each plan.

d) Which plan would you choose? Why?

e) Identify each plan as a direct or a partial variation.

f) How does the type of variation affect the cost?

0

Which of these relations are linear? How do you know?

lecture video lecture video lecture video solution video QR code

2

A small rocket is launched from a hill 1500 m above sea level. It rises at 35 m/s.

a) Write an equation for the relation between the height of the rocket and time.

b) Use a table of values to graph this relation.

lecture video lecture video lecture video solution video QR code

lecture video lecture video lecture video solution video QR code

1

Determine the rate of change.

```
\displaystyle \begin{array}{|r|r|} \hline x & y \\ \hline 1 & 3 \\ \hline 2 & 6 \\ \hline
3 & 9 \\ \hline 4 & 12 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

2

Determine the rate of change.

lecture video lecture video lecture video solution video QR code

3

Determine the rate of change.

```
\displaystyle \begin{array}{|r|r|} \hline x & y \\ \hline 1 & 1 \\ \hline 2 & 4 \\ \hline
3 & 9 \\ \hline 4 & 16 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

4

Determine the rate of change.

```
\displaystyle \begin{array}{|r|c|} \hline x & y \\ \hline 2 & 11 \\ \hline 4 & 17 \\
\hline 6 & 23 \\ \hline 8 & 29 \\ \hline 10 & 35 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

5

Determine the rate of change.

```
\displaystyle \begin{array}{|c|c|} \hline \boldsymbol{x} & \boldsymbol{y} \\ \hline 5 & 0
\\ \hline 4 & 2 \\ \hline 3 & 4 \\ \hline 2 & 6 \\ \hline 1 & 8 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

6

Determine the rate of change.

```
\displaystyle \begin{array}{|l|l|} \hline { \boldsymbol{x} } & \boldsymbol{y} \\ \hline 0 & 0 \\ \hline 0.25 & 2 \\ \hline 0.5 & 4 \\ \hline 0.75 & 6 \\ \hline 1 & 8 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

7

Determine the rate of change.

```
\displaystyle \begin{array}{|c|c|} \hline \boldsymbol{x} & { \boldsymbol{y} } \\ \hline 1 & -2 \\ \hline 4 & -8 \\ \hline 5 & -10 \\ \hline 3 & -6 \\ \hline 2 & -4 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

8

Determine the rate of change.

lecture video lecture video lecture video solution video QR code

9

(a) Why might this table mislead you about whether the relation is linear?

```
\displaystyle \begin{array}{|l|r|r|r|r|} \hline Age of Car in Years, \boldsymbol{x} & 0 &
3 & 1 & 2 \\ \hline Value of Car in Dollars, \boldsymbol{y} & 15000 & 6000 & 12000 & 9000
\\ \hline \end{array}
```

(b) Graph the data.

(c) What is the slope and what does it mean?

(d) What is the x—intercept? Does this seem realistic? Explain.

lecture video lecture video lecture video solution video QR code

10

What is the slope of this roof?

lecture video lecture video lecture video solution video QR code

11

There are three steps from the ground to a front porch 72 cm above the ground, as shown.

a) What is the rise of each step?

b) The horizontal distance across each step is 25 cm. Determine the length of AB.

c) Determine the slope of the handrail.

lecture video lecture video lecture video solution video QR code

12

Determine the slope of the line that passes through each pair of points.

- `(3, 3)` and `(-2, 2)`

lecture video lecture video lecture video solution video QR code

13

Determine the slope of the line that passes through each pair of points.

- `(21, -10)` and `(20, 24)`

lecture video lecture video lecture video solution video QR code

14

Determine the slope of the line that passes through each pair of points.

- `(1, -1)` and `(2,2)`

lecture video lecture video lecture video solution video QR code

15

Determine the slope of the line that passes through each pair of points.

- `(-3, -8)` and `(-5, -6)`

lecture video lecture video lecture video solution video QR code

16

Determine the slope of the line that passes through each pair of points.

- `(4, 0)` and `(6, 18)`

lecture video lecture video lecture video solution video QR code

17

Use the title and axis labels of each graph to tell what the y—intercept and slope mean in each case.

lecture video lecture video lecture video solution video QR code

18

Determine two more ordered pairs for each relation. Explain your reasoning.

rise is 2, run is 3; `(2,5)` lies on the line

lecture video lecture video lecture video solution video QR code

19

Determine two more ordered pairs for each relation. Explain your reasoning.

rise is `-3`, run is `4`; `(0, -2)` lies on the line

lecture video lecture video lecture video solution video QR code

20

Determine two more ordered pairs for each relation. Explain your reasoning.

rise is `-2`, run is `1`; `(-2, -3)` lies on the line.

lecture video lecture video lecture video solution video QR code

21

Determine two more ordered pairs for each relation. Explain your reasoning.

rise is 5, run is 1; `(1, -6)` lies on the line

lecture video lecture video lecture video solution video QR code

22

Write a linear equation for each line.

- a line with a slope of 2 that passes through (4, 1)

lecture video lecture video lecture video solution video QR code

23

Write a linear equation for each line.

- a line with a slope of `-\frac{1}{2}` that passes through (3, 0)

lecture video lecture video lecture video solution video QR code

24

a) Graph the data in the table to the left.

b) How does the graph show the rate of change?

c) Estimate the air pressure at an altitude of 20 km.

```
\displaystyle \begin{array}{|c|c|} \hline Altitude (\mathbf{k m}) & Air Pressure
\mathbf{( P a}) \\ \hline 1 & 80000 \\ \hline 3 & 60000 \\ \hline 6 & 40000 \\ \hline 16
& 20000 \\ \hline 22 & 10000 \\ \hline 30 & 5000 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

25

Graph each relation and state the slope.

```
\displaystyle y = 3x
```

lecture video lecture video lecture video solution video QR code

26

Graph each relation and state the slope.

```
\displaystyle y = -2x
```

lecture video lecture video lecture video solution video QR code

27

Graph each relation and state the slope.

```
\displaystyle y= -x
```

lecture video lecture video lecture video solution video QR code

28

Graph each relation and state the slope.

```
\displaystyle y= \frac{3}{4}x + 1
```

lecture video lecture video lecture video solution video QR code

29

Graph each relation and state the slope.

```
\displaystyle y= -\frac{1}{5}x + 1
```

lecture video lecture video lecture video solution video QR code

30

Graph each relation and state the slope.

$\displaystyle y= \frac{2}{3}x -4$

lecture video lecture video lecture video solution video QR code

31

An equation for a house's value is $y = 7500x + 125\ 000$, where y is the value in dollars and x is the time in years, starting now.

a) What is the current value of the house?

b) What is the value of the house 2 years from now?

c) Determine the value of the house in 7 years.

d) At what rate is the house value changing from year to year?

lecture video lecture video lecture video solution video QR code

32

The amount of money in Alexander's account is $y = 4000 -70x$, where y is the amount in dollars and x is the time in weeks.

a) Which variable is independent and which is dependent?

b) How do you know the relation is linear?

c) Determine the rate of change of the money in Alexander's account.

d) What does the rate of change mean?

e) How does the rate of change relate to the equation?

f) When will Alexander's account be empty?

lecture video lecture video lecture video solution video QR code

33

This graph shows the maximum heart rate a person should try to achieve while exercising.

a) What does the y-intercept mean?

b) What does the slope represent?

c) Write an equation for the line.

d) Estimate the maximum heart for a 58 year old.

lecture video lecture video lecture video solution video QR code

34

This graph shows the maximum heart rate a person should try to achieve while exercising.

a) What does the y-intercept mean?

b) What does the slope represent?

c) Write an equation for the line.

d) Estimate the maximum heart rate for a 58-year-old.

lecture video lecture video lecture video solution video QR code

35

Marie earns $1 for every 4 papers she delivers.

a) Show that the relation between papers delivered and money earned is linear, using a graph and a table of values.

b) What do the first differences mean?

c) What is the rate of change of Marie's earnings?

d) Predict Marie's earnings for delivering 275 papers using an equation.

lecture video lecture video lecture video solution video QR code

36

Write a linear equation for each line.

- a line with a y-intercept of 2 and a slope of `\frac{3}{5}`

lecture video lecture video lecture video solution video QR code

37

Write a linear equation for each line.

- a line with a y-intercept of 0 and a slope of -4

lecture video lecture video lecture video solution video QR code

38

Write a linear equation for each line.

- a line with a y-intercept of 2 and a slope of `\frac{3}{5}`

lecture video lecture video lecture video solution video QR code

39

Write a linear equation for each line.

- a line that passes through (0, 5) and (3, 6)

lecture video lecture video lecture video solution video QR code

0

Graph the relation using the x and y-intercepts.

$\displaystyle -3 x+2 y=6$

lecture video lecture video lecture video solution video QR code

1

Graph each relation using the x and y-intercepts.

$\displaystyle \frac{1}{2}x + \frac{2}{3}y = \frac{1}{6}$

lecture video lecture video lecture video solution video QR code

2

Graph each relation using the x- and y-intercepts.

$\displaystyle y = 2x -1$

lecture video lecture video lecture video solution video QR code

3

Maria works at a boutique and at a travel agency. In all, she works for 38 h per week.

(a) Write a linear relation to model this case. Use x for the number of hours she works at the boutique, and y for the number of hours she works at the travel agency.

(b) What do the x- and y-intercepts mean?

lecture video lecture video lecture video solution video QR code

4

Locate three points on the line $6x - y = 18$, where x and y are both integers, and draw the line.

lecture video lecture video lecture video solution video QR code

5

Graph each relation using the x- and y-intercepts.

$\displaystyle 2x - 5y = 10$

lecture video lecture video lecture video solution video QR code

6

Graph each relation using the x- and y-intercepts.

```
\displaystyle 4x + 5y = 20
```

lecture video lecture video lecture video solution video QR code

7

Graph each relation using the x- and y-intercepts.

```
\displaystyle x + y = 0
```

lecture video lecture video lecture video solution video QR code

8

Graph the relation using the x- and y-intercepts and slope.

```
\displaystyle 2x + 3y = 0
```

lecture video lecture video lecture video solution video QR code

9

Graph each relation using the x- and y-intercepts.

```
\displaystyle 2x + \frac{4}{5}y = 11
```

lecture video lecture video lecture video solution video QR code

10

Graph each relation using the x-and y-intercepts.

```
\displaystyle \frac{1}{4}x - \frac{2}{3}y = 1
```

lecture video lecture video lecture video solution video QR code

11

Graph each relation using the x- and y - intercepts.

```
\displaystyle -\frac{5}{6}x +y = -\frac{1}{3}
```

lecture video lecture video lecture video solution video QR code

12

The relation `y = 2x^2 - 8` is not linear. It has two x-intercepts and one y-intercept.

(a) What is the y-coordinate for both x-intercepts?

(b) Calculate the x—intercepts.

(c) Calculate the y-intercept.

(d) Create a table of values and graph `y = 2x^2 -8` to verify your answers to parts b) and c).

lecture video lecture video lecture video solution video QR code

13

Nicolas has $14.50 in quarters and dimes.

a. Explain why `0.10x + 0.25y = 14.50` models this case.

b. Is this relation linear? Explain.

c. Determine the x— and y—intercepts. What do they mean?

d. Are the data continuous or discrete? Explain.

lecture video lecture video lecture video solution video QR code

14

Amir earns $9/h working in a coffee shop and $11.25/h working in a grocery store. Last week he earned $288.

a) Explain why `9x + 11.25y = 288` models this case.

b) Is this relation a straight line? Explain.

c) Determine the x- and y-intercepts. What do they mean?

d) For how many hours might Amir have worked in each place?

lecture video lecture video lecture video solution video QR code

15

A boat travels down the St. Lawrence River at 30 km/h and moors at a spot where the passengers can watch whales. After a while, it travels back up the river to its starting point at 20 km/h. The boat travels 60 km in all.

a) Explain why $30x + 20y = 60$ models this problem. Explain what x and y represent.

b) Determine the x- and y-intercepts. What do they mean?

c) Graph the relation.

lecture video lecture video lecture video solution video QR code

16

Two airplanes appear on the same radar screen with a coordinate grid The path of one plane is $y = \frac{2}{5}x - 2$ and the path of the other is

$2x - 5y -7 = 0$. Do the paths cross?

lecture video lecture video lecture video solution video QR code

17

Henry charges $3 to sharpen a pair of figure skates and 2.50 to sharpen a pair of hockey skates. Last Sunday, he earned $240.

Determine two possible numbers of pairs of figure skates and hockey skates that Henry could have sharpened.

lecture video lecture video lecture video solution video QR code

18

Henri charges `\$3` to sharpen a pair of figure skates and `\$2.50` to sharpen a pair of hockey skates. Last Sunday, he earned `\$240`.

Henri sharpened 94pairs of skates. How many of each type did he sharpen to earn `\$240`?

lecture video lecture video lecture video solution video QR code

19

Julia is preparing a mix of raisins and nuts for her brother's party. Chocolate raisins are `\$0.88/100 g` and peanuts are `\$1.00/100 g`.

She plans to spend `\$3.00` on the mix.

a) Explain why `0.88x + 1y = 3` models this case.

b) Determine the `x`- and `y`- intercepts. What do they mean?

c) Graph the relation.

lecture video lecture video lecture video solution video QR code

20

Jennifer decides to invest `\$1200` in mutual funds. One stock is `\$3.50/share` and the other is `\$5.75/share`. How many shares of each stock can she buy? Give two possible answers.

lecture video lecture video lecture video solution video QR code

21

Write each equation in `y = mx + b` form.

`\displaystyle 4x + 2y = 8`

lecture video lecture video lecture video solution video QR code

22

Write it in `y = mx + b` form.

`\displaystyle x + y = 2`

lecture video lecture video lecture video solution video QR code

23

Write each equation in `y = mx + b` form.

`\displaystyle 3x -4y + 1 = 0`

lecture video lecture video lecture video solution video QR code

24

Write the equation of each line in the form `Ax + By = C`.

`x`-intercept 4, `y`-intercept -2

lecture video lecture video lecture video solution video QR code

25

Write the equation of each line in the form `Ax + By = C`.

`x`-intercept `\frac{1}{2}`, `y`-intercept `\frac{3}{4}`

lecture video lecture video lecture video solution video QR code

26

Write the equation of each line in the form `Ax + By = C`.

`x`-intercept `\frac{1}{2}`, `y`-intercept `-3`

lecture video lecture video lecture video solution video QR code

27

Write the equation of each line in the form `Ax + By = C`.

`x`-intercept `\frac{2}{3}`, `y`-intercept `3`

lecture video lecture video lecture video solution video QR code

0

Identify each relation as linear or nonlinear. Explain how you know.

lecture video lecture video lecture video solution video QR code

1

The area of a Circle of radius `r` is `A =\pi r^2`. Identify this relation as linear or nonlinear. Explain.

lecture video lecture video lecture video solution video QR code

2

Identify each relation as linear or nonlinear.

```
\displaystyle \begin{array}{|r|c|} \hline x & y \\ \hline -3 & 9 \\ \hline -2 & 4 \\
\hline -1 & 1 \\ \hline 0 & 0 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

3

Identify each relation as linear or nonlinear.

```
\displaystyle \begin{array}{|c|c|} \hline x & y \\ \hline 5 & 1 \\ \hline 6 & 2 \\ \hline
7 & 3 \\ \hline 8 & 4 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

4

Identify each relation as linear or nonlinear.

```
\displaystyle \begin{array}{|c|c|} \hline x & y \\ \hline 1 & 0.25 \\ \hline 2 & 0.50 \\
\hline 3 & 0.75 \\ \hline 4 & 1.00 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

5

Johnny ran these distances while training for a marathon.

```
\displaystyle \begin{array}{|c|c|} \hline Time (min) & Distance Run \mathbf{( k m}) \\
\hline 0 & 0 \\ \hline 10 & 2 \\ \hline 20 & 4 \\ \hline 30 & 6 \\ \hline \end{array}
```

a. Would you choose time or distance as the independent variable? Explain.

b. Identify the relation between distance and time as linear or nonlinear. Explain how you know.

lecture video lecture video lecture video solution video QR code

6

Identify the relation as linear or nonlinear. Explain your reasoning.

- the relation between the number of circles in each figure and the figure number

S

lecture video lecture video lecture video solution video QR code

7

Identify the relation as linear or nonlinear. Explain your reasoning.

- the relation between the number of stars in each figure and the figure number

S

lecture video lecture video lecture video solution video QR code

8

The relation between kilometres driven, la, and the amount of gasoline, G, (in litres) in the tank of a hybrid car is $G = 80 - 0.2k$.

a) Identify this relation as linear or nonlinear. Explain how you know.

b) Use either a graph or a table to confirm your answer in part a).

lecture video lecture video lecture video solution video QR code

9

When a piece of paper is folded in half. one crease line and two sections of paper are created. The paper is then folded in half again and again. each time increasing the number of crease lines by 1. Identify the relation between the number of creases and the number of sections of paper as linear or nonlinear. Justify your answer

lecture video lecture video lecture video solution video QR code

10

Each pattern represents a relation between the figure number and the number of red triangles needed to make it.

a) Which of these patterns are linear and which are nonlinear relations?

b) Explain how you know.

lecture video lecture video lecture video solution video QR code

11

Calculate the first, second, and third differences for each relation. What is the connection between the degree of the equation and the differences?

```
\displaystyle y =x^3
```

lecture video lecture video lecture video solution video QR code

12

The amount of cucumbers you can grow in a season depends on the amount of rainfall you get. This relation is represented by the equation `\displaystyle C=0.006(R+20)` , where `\displaystyle R` is the rainfall in millimetres and `\displaystyle C` is the cucumber yield in kilograms per square metre.

a) Identify this relation as linear or nonlinear. Explain how you know.

b) Use either a graph or a table of values to confirm your answer in part a).

lecture video lecture video lecture video solution video QR code

0

Write the equation of a line for the table below.

```
\displaystyle \begin{array}{|c|c|} \hline x & y \\ \hline 1 & 0 \\ \hline 3 & 2 \\ \hline
5 & 4 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

1

Write the equation of a line for the table below.

```
\displaystyle \begin{array}{|r|r|} \hline x & y \\ \hline -1 & 1 \\ \hline 2 & -2 \\
\hline 5 & -5 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

2

Graph the line below.

```
y = 2x + 4
```

lecture video lecture video lecture video solution video QR code

3

Write the equation of a line.

lecture video lecture video lecture video solution video QR code

4

Write the equation of a line.

lecture video lecture video lecture video solution video QR code

5

Sketch the graph of `\displaystyle 3x -2y =12`

lecture video lecture video lecture video solution video QR code

6

Identify each relation in question 1 as a direct or partial variation. Explain.

lecture video lecture video lecture video solution video QR code

7

Solve each relation below for $x = 7$.

lecture video lecture video lecture video solution video QR code

8

Calculate the slope of each line.

The rise is 4 and the run is 5.

lecture video lecture video lecture video solution video QR code

9

Calculate the slope of each line.

`\Delta y = 8` when `\Delta x = 2`

lecture video lecture video lecture video solution video QR code

10

Calculate the slope of each line.

The change in x is 6 and the change in y is 10.

lecture video lecture video lecture video solution video QR code

11

Calculate the slope of each line.

The line passes through points (2, 7) and (6, -1)

lecture video lecture video lecture video solution video QR code

12

Calculate the slope of each line.

The first differences are -5 when the change in x is 1.

lecture video lecture video lecture video solution video QR code

13

Kristina is snowboarding down this hill.

a) On which segment will she go fastest? Why?

b) On which segment will she go slowest? Why?

c) Prove your answers to parts a) and b) mathematically.

lecture video lecture video lecture video solution video QR code

14

Determine tow more ordered pairs that lie on each line.

The rise is 3, the run is 4, and (2, -5) is on the line.

lecture video lecture video lecture video solution video QR code

15

Determine tow more ordered pairs that lie on each line.

The slope is `\frac{2}{3}` and the y-intercept is (0, 5).

lecture video lecture video lecture video solution video QR code

16

Determine tow more ordered pairs that lie on each line.

The slope is `-\frac{3}{5}` and the x-intercept is (3, 0).

lecture video lecture video lecture video solution video QR code

17

Determine tow more ordered pairs that lie on each line.

`\delta y = 5`, `\delta x = 2`, and (-1, -1) is on the line.

lecture video lecture video lecture video solution video QR code

18

Graph `\displaystyle y = \frac{2}{3}x -4`

lecture video lecture video lecture video solution video QR code

19

Graph `\displaystyle 3x - 6y = 12`

lecture video lecture video lecture video solution video QR code

20

A rectangle has a perimeter of 210 cm.

a) Explain why 2L + 2W = 210 models the case. What are L and W?

b) Graph 2L + 2W = 210.

c) Is the set of data discrete or continuous? Explain.

d) Determine two combinations of length and width for this rectangle.

lecture video lecture video lecture video solution video QR code

21

Is $x = 5$ the x-intercept of $2x - 3y = 10$? Explain how you know.

lecture video lecture video lecture video solution video QR code

22

Identify each relation as linear or nonlinear. Explain your reasoning.

lecture video lecture video lecture video solution video QR code

23

A ball is hit straight up into the air. The table shows its height at various times.

$$\displaystyle \begin{array}{|c|c|} \hline \text{Time (s)} & \text{Height (m)} \\ \hline 0 & 1 \\ \hline 1 & 26 \\ \hline 2 & 41 \\ \hline 3 & 46 \\ \hline 4 & 41 \\ \hline 5 & 26 \\ \hline 6 & 1 \\ \hline \end{array}$$

a) Identify the relation between height and time as linear or nonlinear.

b) Graph the data.

c) Estimate the height of the ball at 1.5 seconds.

d) Estimate the time at which the height of the ball is 44 m.

e) Determine the time at which the ball hits the ground.

f) Determine the maximum height of the ball.

lecture video lecture video lecture video solution video QR code

24

The table shows the value)1, in dollars, of a rate coin that is x years old.

```
\displaystyle \begin{array}{|r|r|} \hline \boldsymbol{x} & \boldsymbol{y} \\ \hline 0 &
0.25 \\ \hline 10 & 750.25 \\ \hline 20 & 1500.25 \\ \hline 30 & 2250.25 \\ \hline
\end{array}
```

a) Is this relationship linear or nonlinear?

b) Graph the data.

c) Find the equation of this relationship.

d) Use the equation to find the value of the coin after 15 years.

lecture video lecture video lecture video solution video QR code

0

A fruit stand sells apples for $0.25 each.

a. Describe the relation between cost and number of apples bought using a graph, a table, or an equation.

b. Which variable is independent and which is dependent?

c. Is the set of data continuous or discrete?

d. Determine the cost of 150 apples.

lecture video lecture video lecture video solution video QR code

1

Gill rents a car for $45/day plus $0.15/km. Is the relation between distance and cost linear? Use a table to support your answer.

lecture video lecture video lecture video solution video QR code

2

Is the following describe a

```
\displaystyle \begin{array}{|l|l|l|l|r|r|r|r|} \hline Distance (m) & 0 & 4 & 8 & 12 & 16
& 20 & 24 \\ \hline Time (s) & 0 & 1 & 2 & 3 & 4 & 5 & 6 \\ \hline \end{array}
```

- linear or non linear?
- direct or partial variation?

lecture video lecture video lecture video solution video QR code

3

What is the slope of the line between points $(0, 4)$ and $(3, -1)$?

lecture video lecture video lecture video solution video QR code

4

What is the rate of change of the stretch of a spring with a weight attached?

$$\displaystyle \begin{array}{|l|r|r|r|r|} \hline \text{Mass (g)} & 1 & 2 & 3 & 4 \\ \hline \text{Stretch (cm)} & 5 & 10 & 15 & 20 \\ \hline \end{array}$$

lecture video lecture video lecture video solution video QR code

5

George is going 6km on foot. He can run at 4km/h and walk at 2km/h.

a. Explain why $4x + 2y = 6$ models the distance he will travel. What do x and y represent?

b. How long would it take him to run all the way and to walk all the way?

c. Graph the combinations of times that he could walk and run.

d. Determine three combinations of times that George could walk and run.

lecture video lecture video lecture video solution video QR code

6

Identify the relation between the figure number and the number of squares as linear or nonlinear. Use a table of values, a graph, and an equation to support your answer.

lecture video lecture video lecture video solution video QR code

7

Identify the relation between the figure number and the number of squares as linear or nonlinear. Use a table of values, a graph, and an equation to support your answer.

lecture video lecture video lecture video solution video QR code

0

Which expression do the tiles represent?

A. `\displaystyle (x^2+ 2x + 4)-(3x^2 -3x + 1)`

B. `\displaystyle (x^2+ 2x + 4)-3x^2 -3x + 1`

C. `\displaystyle (-3x^2+ 3x + 1)+(x^2 + 2x + 4)`

D. `\displaystyle (-3x^2- 3x - 1)+(x^2 + 2x + 4)`

lecture video lecture video lecture video solution video QR code

1

The area and length of a rectangle are shown. Determine the missing side.

lecture video lecture video lecture video solution video QR code

2

Read these statements about the graph.

i) Line 1 is a direct variation.

ii) Pay is the independent variable.

iii) Line 2 represents a lower-paying job than line 1.

Chapter 4 Equations

What price does Peter pay for the ornaments?

A. Only i) is true.

B. Only ii) is true.

C. Both 1) and ii) are true.

D. Both i) and iii) are true.

lecture video lecture video lecture video solution video QR code

0

Estimate the solution to `4.25x -3 = 9.5` using a table of values. Verify your solution.

lecture video lecture video lecture video solution video QR code

1

Solve for x.

`\displaystyle 2.75x + 3.8 = 3.8`

lecture video lecture video lecture video solution video QR code

2

Estimate the solution to `-2= 5 -\frac{1}{4}x` using a graph. Verify your solution.

lecture video lecture video lecture video solution video QR code

3

Solve for the unknown.

$\displaystyle -2 + \frac{1}{2}n = -5$

lecture video lecture video lecture video solution video QR code

4

Solve the following using algebra.

a) $4.25x - 3= 9.5$

b) $-2= 5 - \frac{1}{4}x$

lecture video lecture video lecture video solution video QR code

5

Solve for x.

$\displaystyle 2x + 9 = 4$

lecture video lecture video lecture video solution video QR code

6

Solve for x.

```
\displaystyle 2x - 8 = -9
```

lecture video lecture video lecture video solution video QR code

7

Solve for the unknown.

```
\displaystyle 2x + 3 = 11
```

lecture video lecture video lecture video solution video QR code

8

Justin is purchasing chain link fence for his yard. It costs $5.25 per linear foot of fencing. How many feet of fencing can he buy if his budget is $600?

a) Estimate the amount of fencing using a table of values or a graph.

b) Determine the exact amount of fencing using algebra.

c) Verify your solution.

lecture video lecture video lecture video solution video QR code

9

A rectangular field is 100 m long. It is Fully enclosed by 500 m fencing.

a) Explain why the equation 500 = 2(100) + 2w can be used to determine w, the width of the field.

b) Estimate the solution to the equation. Verify your solution. Solve the equation using algebra.

c) Solve the equation using algebra.

d) How wide is the field?

lecture video lecture video lecture video solution video QR code

10

Solve for x.

```
\displaystyle -3x -11 =7
```

lecture video lecture video lecture video solution video QR code

11

Solve for x.

```
\displaystyle 35 -2x = 13
```

lecture video lecture video lecture video solution video QR code

12

Solve for x.

```
\displaystyle 7 -3x = 16
```

lecture video lecture video lecture video solution video QR code

13

Solve for the unknown.

```
\displaystyle -17 = 3 -4n
```

lecture video lecture video lecture video solution video QR code

14

A rocket is launched from a hill that is 700 m high. The rocket's altitude increases by 35 m every 2 s.

a) Create the linear relation that models the rocket's upward path.

b) Graph the linear relation.

c) Write the equations you would solve to determine the height of the rocket at 50 s and 100 5. Estimate the solution to these equations using the graph.

d) Write the equation you would use to determine when the rocket reaches a height of 1000 m. Use the graph to estimate the solution to this equation.

lecture video lecture video lecture video solution video QR code

15

Party Planners is catering a party. Its services cost $25 per person with a minimum of 50 guests, but it does not charge for the first 10 people.

a) Create the linear relation that models the catering costs in terms of the number of people attending the party.

b) Graph the linear relation.

c) Write the equations you would solve to determine the costs for 50 people and 75 people. Solve these equations using the graph.

d) Write the equations you would use to determine how many people could attend for a total cost of $1500. Estimate the solution using the graph.

lecture video lecture video lecture video solution video QR code

16

A large water tank holds 100‘ L of water. It is leaking at a rate of 5 L/ min.

a) Write the linear relation that models the amount of water remaining in the tank in terms of the number of minutes since the tank started leaking.

b) Write the equation you would solve to determine the amount ofwater remaining in the tank 13 minutes after the water started leaking.

c) Write the equation you would solve to determine when the tank would be half full.

d) How are the equations in parts b), and c) similar? How are they different?

e) Solve each equation using a graph.

f) Solve each equation using algebra. Verify your solution using the equation.

lecture video lecture video lecture video solution video QR code

17

This graph shows Samantha’s earnings against hours worked.

a) Write the linear relation that models this graph.

b) Write the equation you would solve to determine the number of hours worked if Samantha’s earnings were $500.

c) Write the equation you would solve to determine her earnings for 40 hours worked.

d) How are the equations in parts b) and c) similar? How are they different?

e) Estimate the solution to each of the equations using the graph. Verify your solutions.

f) Solve the equations using algebra.

18

lecture video lecture video lecture video solution video QR code

Use algebra to determine the x-intercept for each of the following:

```
\displaystyle y = 4x + 8
```

lecture video lecture video lecture video solution video QR code

19

Use algebra to determine the x-intercept for each of the following:

```
\displaystyle y = \frac{1}{2}x - 5
```

lecture video lecture video lecture video solution video QR code

20

Use algebra to determine the x-intercept for each of the following:

```
\displaystyle y = x
```

lecture video lecture video lecture video solution video QR code

21

Use algebra to determine the x-intercept for each of the following:

$$\displaystyle y = -1$$

lecture video lecture video lecture video solution video QR code

22

a) Write an equation for the relationship between the figure num and number of counters in each figure.

b) Use the equation to determine the figure that can be made with exactly 60 counters

c) Explain why there is no figure in this pattern that can be made with exactly 100 counters.

lecture video lecture video lecture video solution video QR code

23

Solve for x.

$$\displaystyle \frac{x + 2}{5} - 3x = 7$$

lecture video lecture video lecture video solution video QR code

24

Solve for x.

```
\displaystyle \frac{1}{2}(x + 2) - \frac{1}{3}(x - 1) =4
```

lecture video lecture video lecture video solution video QR code

25

Solve for x.

```
\displaystyle x^2 + 7 = 16
```

lecture video lecture video lecture video solution video QR code

26

Solve for x.

```
\displaystyle 2x^2 -3 = 11
```

lecture video lecture video lecture video solution video QR code

27

Solve for x.

$\displaystyle 3x^2 - 9= 72$

lecture video lecture video lecture video solution video QR code

28

Given the linear relation $y = mx + b$, what equation would you solve to determine the x—intercept? Justify your answer.

lecture video lecture video lecture video solution video QR code

0

List the inverse operations and the order in which you would apply them to isolate the variable in each equation.

$-3x +2 = 15$

lecture video lecture video lecture video solution video QR code

1

List the inverse operations and the order in which you would apply them to isolate the variable in each equation.

$12.4x - 3.2 = 21.5$

lecture video lecture video lecture video solution video QR code

2

List the inverse operations and the order in which you would apply them to isolate the variable in each equation.

$\frac{x}{2} + 5 = 11$

lecture video lecture video lecture video solution video QR code

3

Solve each equation.

```
\displaystyle \frac{x}{4} + 1 =3
```

lecture video lecture video lecture video solution video QR code

4

Solve each equation.

```
\displaystyle \frac{x}{2} - 10 =3
```

lecture video lecture video lecture video solution video QR code

5

Solve each equation.

```
\displaystyle 5 - \frac{y}{3} = 3
```

lecture video lecture video lecture video solution video QR code

6

Solve each equation.

```
\displaystyle 10+ \frac{b}{5} = - 1
```

lecture video lecture video lecture video solution video QR code

7

Solve each equation.

```
\displaystyle \frac{w}{3} + 5 = 1
```

lecture video lecture video lecture video solution video QR code

8

Solve each equation.

```
\displaystyle 3 -\frac{d}{6} = -1
```

lecture video lecture video lecture video solution video QR code

9

Solve for the unknown.

$6b - 10 = -2$

lecture video lecture video lecture video solution video QR code

10

Solve for the unknown.

$3f - 4 = 10$

lecture video lecture video lecture video solution video QR code

11

Solve for the unknown.

$2.5c + 1.0 = 1.5$

lecture video lecture video lecture video solution video QR code

12

Solve for the unknown.

$6 - 2d = 4$

lecture video lecture video lecture video solution video QR code

13

Solve for the unknown.

$6 - 2e = 6$

lecture video lecture video lecture video solution video QR code

14

Solve for the unknown.

$-3 - h = -2$

lecture video lecture video lecture video solution video QR code

15

The relation $C = 8.00 + 0.50T$ represents the cost of a pizza in dollars. T represents the number of toppings ordered.

(a) Write an equations that represents a \$10 order.

(b) Solve the equations in a) to determine the number of toppings. Show all steps.

lecture video lecture video lecture video solution video QR code

16

A submarine is currently submerged at a depth of $600\ m$. It rises at a rate of $4\ m/s$.

(a) Write a linear relation that shows the relationship between the depth of the submarine and the number of second it has been rising.

(b) Write the equation you must solve to determine when the submarine will reach a depth of 486 m.

(c) List the inverse operations you need to use to isolate the variable and solve the equation.

(d) Solve the equation. Show all the steps.

lecture video lecture video lecture video solution video QR code

17

A hot-air balloon is at a height of 500 m. I develops a steady leak and beings to descend at a rate of 60m/min. Write and solve an equation to determine how long it takes for the balloon to reach a height of 20 m

lecture video lecture video lecture video solution video QR code

18

Liz was testing Jane on solving with equations. She gave Jane the following problem:

"I am a number such that when you divide me by 7, and then, add 13 you get 32. What number am I?"

Write and solve an equation to determine Liz's number.

lecture video lecture video lecture video solution video QR code

19

Solve each equation.

$3(x + 1) = 12$

lecture video lecture video lecture video solution video QR code

20

Solve each equation.

$2(x - 4) = 4$

lecture video lecture video lecture video solution video QR code

21

Solve each equation.

```
\displaystyle 2x + 3 = 4(1-x)+ 5
```

lecture video lecture video lecture video solution video QR code

22

Solve each equation.

```
\frac{w +3}{4} = 2
```

lecture video lecture video lecture video solution video QR code

23

Solve each equation.

```
\frac{y - 5}{3} =6
```

lecture video lecture video lecture video solution video QR code

24

Solve each equation.

```
\frac{2a + 3}{3} =5
```

lecture video lecture video lecture video solution video QR code

25

Solve each equation.

```
\displaystyle -2= \frac{-2c}{5} + 1
```

lecture video lecture video lecture video solution video QR code

26

Jane's Restaurant charges `\$22.95` for brunch but allows one person per table to eat free. To figure out how many people attended the Sunday brunch, Jack collected the information in this table.

```
\displaystyle \begin{array}{|c|c|} \hline Table Number & Bill Total(\$) \\ \hline 1 &
137.70 \\ \hline 2 & 68.85 \\ \hline 3 & 160.65 \\ \hline 4 & 91.80 \\ \hline 5 & 91.80
\\ \hline \end{array}
```

a) Why is it reasonable that Jack used the equation `22.95(x - 1) = T` to determine the number of people at each table? What do the variables `x` and `T` represent?

b) Create and solve the equation for each table number.

c) How many people in total sat at the five tables?

lecture video lecture video lecture video solution video QR code

27

The relationship between Celsius and Fahrenheit is represented by `C = \dfrac{5}{9}(F - 32)`

- Determine the Celsius temperature that is equivalent to `58 ^oF`.

lecture video lecture video lecture video solution video QR code

28

The relationship between Celsius and Fahrenheit is represented by `C = \dfrac{5}{9}(F - 32)`

- List the operations you used to calculate the Celsius temperature.

lecture video lecture video lecture video solution video QR code

29

The relationship between Celsius and Fahrenheit is represented by `C = \dfrac{5}{9}(F - 32)`

- List the inverse operations you would use to isolate F.
- Determine the Fahrenheit temperature that is equivalent to `25 ^oC`.

lecture video lecture video lecture video solution video QR code

30

Solve each equation.

$\displaystyle \frac{1}{2}x -\frac{1}{4} = \frac{x}{3} + \frac{1}{6}$

lecture video lecture video lecture video solution video QR code

0

Use inverse operations to solve $2x + 4 = 4x -2$.

lecture video lecture video lecture video solution video QR code

1

To determine the dimensions of the rectangle with

- perimeter 44 cm and
- width 3 cm less than the length,

Florence drew a diagram:

lecture video lecture video lecture video solution video QR code

2

The perimeter of a rectangle is 36 cm. The width is 5 cm less than the length. Determine the dimensions of the rectangle.

lecture video lecture video lecture video solution video QR code

3

A square has sides of length `2k -1` units. An equilateral triangle has sides of length `k + 2` units. The square and the triangle have the same perimeter. What it he value of `k`?

lecture video lecture video lecture video solution video QR code

4

Given solved equation below, explain the mathematical reasoning for each step.

```
\displaystyle \begin{array}{cccccccc} &2x + 8 &= &4x - 18 \\ &2x + 8 -2x &= &4x - 18
-2x\\ &8 &= &2x - 18 \\ & 8 &= &2x - 18 \\ &8+18 &= &2x -18 + 18 \\ & 26 &= &2x \\
&\frac{26}{2} &= &x \\ \end{array}
```

lecture video lecture video lecture video solution video QR code

5

Solve each equation. Verify each solution.

```
5x + 24 = 2x
```

lecture video lecture video lecture video solution video QR code

6

Solve each equation. Verify each solution.

$2k = 4k - 15$

lecture video lecture video lecture video solution video QR code

7

Solve each equation. Verify each solution.

$-4x - 1 = -3x + 5$

lecture video lecture video lecture video solution video QR code

8

Solve each equation. Verify each solution.

$2x - 3x + 6 = 7 - x + 2$

lecture video lecture video lecture video solution video QR code

9

Solve each equation. Verify each solution.

```
3b - 4 - 5b = -3b -2
```

lecture video lecture video lecture video solution video QR code

10

Solve each equation. Verify each solution.

```
a + 2a + 3a - 6 = 7a - 6
```

lecture video lecture video lecture video solution video QR code

11

Given each solved equation below, explain the mathematical reasoning for each step.

```
\displaystyle \begin{array}{cccccccc} & \frac{1}{2}x + \frac{2}{3} &= &5 \\
&6\times(\frac{1}{2}x + \frac{2}{3}) &= &5\times 6 \\ &3x + 4 &= &30 \\ &3x + 4-4 &= &30-
4 \\ &3x &= &26 \\ &\frac{3x}{3} &= &\frac{26}{3} \\ &x &= &8\frac{2}{3} \\ \end{array}
```

lecture video lecture video lecture video solution video QR code

12

Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

```
\displaystyle \frac{x - 5}{4} + 1 = \frac{1}{2}
```

lecture video lecture video lecture video solution video QR code

13

Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

```
\displaystyle -16 = \frac{x }{5} + \frac{x}{3}
```

lecture video lecture video lecture video solution video QR code

14

Solve each equation.

```
\frac{x}{2} + \frac{x}{3} =10
```

lecture video lecture video lecture video solution video QR code

15

Solve each equation.

$\frac{c}{3} -\frac{c}{4} =3$

lecture video lecture video lecture video solution video QR code

16

Explain why the equations in each group are equivalent equations.

$5x + 8 = 2(2x -3)$, $5x + 8 = 4x - 6$, and $5x - 4x = -6 -8$

lecture video lecture video lecture video solution video QR code

17

Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

$\displaystyle -\frac{2}{5}(x - 8) = 4$

lecture video lecture video lecture video solution video QR code

18

Explain why the equations in each group are equivalent equations.

`\frac{x}{4} +5 = \frac{1}{3}`, `\frac{3x}{12} + \frac{60}{12} =\frac{4}{12}`, and `3x + 60 = 4`

lecture video lecture video lecture video solution video QR code

19

Explain why the equations in each group are equivalent equations.

`5x - 8 = 12`, `\frac{5x}{6} - \frac{4}{3} =2`, and `\frac{5x}{6}-\frac{8}{6}= \frac{12}{6}`

lecture video lecture video lecture video solution video QR code

20

Solve `n + (n + 1) + (n + 2) = 54`

lecture video lecture video lecture video solution video QR code

21

Solve each equation. Verify each solution.

$3(x - 5) = 6$

lecture video lecture video lecture video solution video QR code

22

Solve each equation. Verify each solution.

$-5 = 5(3 + 2d)$

lecture video lecture video lecture video solution video QR code

23

Solve each equation. Verify each solution.

$-3(5 - 6m) = 39$

lecture video lecture video lecture video solution video QR code

24

Solve each equation. Verify each solution.

$2(x - 2) = 3x - 14$

lecture video lecture video lecture video solution video QR code

25

Solve each equation. Verify each solution.

$3(c + 5) = 4(1 - 2c)$

lecture video lecture video lecture video solution video QR code

26

Solve each equation. Verify each solution.

$4(x - 2) = -3(3x + 6)$

lecture video lecture video lecture video solution video QR code

27

A number, n, decreased by 6, is equal to 3 times the number plus 1.

Determine the number.

lecture video lecture video lecture video solution video QR code

28

George is three times as old as Sam. Five years from now, the sum of their ages will be 46.

(a) Create an equation that represents the relationship between George's and Sam's ages five years from now.

(b) Use your equation to determine they current ages.

lecture video lecture video lecture video solution video QR code

29

Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

```
\frac{3x}{4}+\frac{2}{3} =2
```

lecture video lecture video lecture video solution video QR code

30

Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

```
\displaystyle \frac{1}{2} -\frac{x}{3} = \frac{1}{3}
```

lecture video lecture video lecture video solution video QR code

31

Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

```
\displaystyle \frac{2}{3} = 5 + x
```

lecture video lecture video lecture video solution video QR code

32

Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

```
\displaystyle \frac{y + 2}{3} =\frac{1}{5}(2y + 3)
```

lecture video lecture video lecture video solution video QR code

33

Solve each equation.

```
\frac{x}{3} = 2
```

lecture video lecture video lecture video solution video QR code

34

Solve each equation.

```
\frac{d}{4} + 3 = 2
```

lecture video lecture video lecture video solution video QR code

35

Solve each equation.

```
\frac{3k}{5} - 6 = \frac{k}{3}
```

lecture video lecture video lecture video solution video QR code

36

Solve each equation.

```
\frac{2x + 1}{3} = 5
```

lecture video lecture video lecture video solution video QR code

37

The sum of one-half of a number, q and thee-fifths is two-thirds the number is q, Determine the number.

lecture video lecture video lecture video solution video QR code

38

Create and solve an equation.

- It takes Eli 4 hours to paint a room. It takes Mia 3 hours to paint a room. How long would it take them to pain the room together?

lecture video lecture video lecture video solution video QR code

39

Create and solve an equation.

- Amir can put together a puzzle in 30 minutes. Bob takes double the amount of time. How long will it take them to do it together?

lecture video lecture video lecture video solution video QR code

40

Create and solve an equation.

- A jet left Toronto for Vancouver, travelling at a speed 600 km/h. At the same time, a jet left Vancouver for Toronto, travelling at a speed of 800 km/h. If the distance between Toronto and Vancouver is 3500 km, when will the jets pass each other?

lecture video lecture video lecture video solution video QR code

41

Show that the equation $2x - 3 = 4 + 2x$ has no solution. Explain.

lecture video lecture video lecture video solution video QR code

42

Show that the equation `\frac{10 -6x}{2} = 5 - 3x` has an infinite number of solutions. Why do you think this happens?

lecture video lecture video lecture video solution video QR code

43

David has 16 dimes and quarters. Colin has twice as many dimes and `\frac{1}{3}` as many quarters as David.

They both have the same amount of money. How many coins of dimes and quarters did David have?

```
\displaystyle \begin{array}{|c|c|c|c|c|} \hline & No. of Quarters & No. of dimes & Value of Quarters & Value of Dimes \\ \hline David & \mathrm{q} & 16-\mathrm{q} & 25 \mathrm{q} & \\ \hline Colin & \frac{9}{3} & & & \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

44

Determine the value of `x` in each diagram.

lecture video lecture video lecture video solution video QR code

45

Determine the value of x in each diagram.

lecture video lecture video lecture video solution video QR code

46

Determine the value of x in each diagram.

lecture video lecture video lecture video solution video QR code

47

Solve the equation

$3x^2 - 2 = 25$

lecture video lecture video lecture video solution video QR code

48

Solve the equation

$2(x + 1)^2 -1 = 71$

lecture video lecture video lecture video solution video QR code

49

Chris is organizing a candy hunt for the children in her neighbourhood. He spent $102 to buy 500 large candies and 400 small candies. The ratio of the price of a large candy to the price of a small candy is 7:4. Find the prices of one large and one small candy.

lecture video lecture video lecture video solution video QR code

0

Use a graph to determine the solution to each equation.

a) $x + 2= 7$

b) $4x - 4 = 8$

c) $-2x -9= -5$

d) $-7x -14 = -14$

lecture video lecture video lecture video solution video QR code

1

A submarine starts at sea level and descends 50 m every 5 min.

a) Make a table of values of the submarine's depth. Use intervals of5 min, up to 30 min.

b) Graph the submarine's depth at 30 min.

c) What patterns do you see in the table and the graph?

d) If the submarine started at a depth of 219 m, what relation would model the submarine's location in relation to time?

e) Create an equation to show how long it would take the submarine to reach a depth of 428 m.

lecture video lecture video lecture video solution video QR code

2

Solve using inverse operations.

$2x - 5 = 7$

3

Solve using inverse operations.

$3x + 4 = 10$

lecture video lecture video lecture video solution video QR code

lecture video lecture video lecture video solution video QR code

4

Solve using inverse operations.

$-6 = 3 + 3x$

lecture video lecture video lecture video solution video QR code

5

Solve using inverse operations.

$-2.1k + 5.6 = 20.2$

lecture video lecture video lecture video solution video QR code

6

Solve using inverse operations.

$-8.75z + 12.5 = 12.5$

lecture video lecture video lecture video solution video QR code

7

Solve using inverse operations.

$-a + 5 = 0$

lecture video lecture video lecture video solution video QR code

8

Anna joins a book club. The first six books are free, but after that he pays $8.98 per book.

a) Write an expression for the cost of b books.

b) How much would he pay for eight books?

c) Anna receives his first shipment of books with a bill for $53.88. Create and solve an equation to determine how many books he ordered.

lecture video lecture video lecture video solution video QR code

9

Jim can paint a house in 10 h and Mandy can paint the same house in 12 h. How long will it take if they work together?

lecture video lecture video lecture video solution video QR code

10

Solve for x.

$$\displaystyle -x + 6 = 2x - 12$$

lecture video lecture video lecture video solution video QR code

11

Solve for x.

$$\displaystyle \frac{2}{3}x - 2 = 4x + \frac{4}{3}$$

lecture video lecture video lecture video solution video QR code

12

Solve for x.

```
\displaystyle 4(x - 8) = -2(x - 5)
```

lecture video lecture video lecture video solution video QR code

13

Solve for x.

```
\displaystyle \frac{1}{5}(x+1) = \frac{1}{3}(2x - 3)
```

lecture video lecture video lecture video solution video QR code

14

Solve for x.

```
\displaystyle \frac{2}{3}x -\frac{1}{2} = -\frac{1}{2} + \frac{1}{4}x
```

lecture video lecture video lecture video solution video QR code

15

Solve for x.

```
\displaystyle \frac{4x- 2}{5} + \frac{1}{2} = \frac{3x + 7}{2} - 1
```

lecture video lecture video lecture video solution video QR code

16

Solve

```
\displaystyle \frac{k}{3} + 1 = 4
```

lecture video lecture video lecture video solution video QR code

17

For each equation, write an equivalent equation multiply both sides by a constant to eliminate fraction expression then solve.

```
\displaystyle \frac{x}{2} - 3 = 1\frac{1}{6}
```

lecture video lecture video lecture video solution video QR code

18

For each equation, write an equivalent equation multiply both sides by a constant to eliminate fraction expression then solve.

```
\displaystyle -1\frac{2}{3}g + \frac{7}{9} = 0
```

lecture video lecture video lecture video solution video QR code

19

For each equation, write an equivalent equation multiply both sides by a constant to eliminate fraction expression then solve.

```
\displaystyle \frac{2}{3}h + \frac{1}{4} = 3\frac{1}{2}
```

lecture video lecture video lecture video solution video QR code

20

Create and solve an equation to answer each problem below.

The perimeter of a rectangle is 210 m. The length is 7 m longer than the width.

lecture video lecture video lecture video solution video QR code

21

Solve for x.

lecture video lecture video lecture video solution video QR code

22

Tom has 117 quarters and dimes worth a total of $\$15.75$. How many of each coin does he have?

lecture video lecture video lecture video solution video QR code

0

Solve for the variable indicated.

$3x + y = 5$, solve for x.

lecture video lecture video lecture video solution video QR code

1

Solve for the variable indicated.

$2x + 5y = -10$; solve for y.

lecture video lecture video lecture video solution video QR code

2

Solve for y in terms of x.

$2y = 8 - 4x$

lecture video lecture video lecture video solution video QR code

3

Solve for `y` in terms of `x`.

```
-2x - 3y =12
```

lecture video lecture video lecture video solution video QR code

4

Solve for `y` in terms of `x`.

```
2.8x + 1.1y -5.3 = 0
```

lecture video lecture video lecture video solution video QR code

5

Solve for `y` in terms of `x`.

```
\displaystyle \frac{7}{5}y +\frac{2}{3}x =\frac{11}{13}
```

lecture video lecture video lecture video solution video QR code

6

Solve for y in terms of x.

$\displaystyle \frac{4}{5} = \frac{2}{3}x + 1\frac{1}{2}y$

lecture video lecture video lecture video solution video QR code

7

Solve for y in terms of x.

$3(y - 2) + 2x = 8$

lecture video lecture video lecture video solution video QR code

8

Start with the relation $2x -5y = 20$

Solve for y in terms of x.

lecture video lecture video lecture video solution video QR code

9

Start with the relation $2x - 5y = 20$

Graph this relation using x as the independent variable.

lecture video lecture video lecture video solution video QR code

10

Start with the relation $2x - 5y = 20$

State the slope and the intercepts of the graph.

lecture video lecture video lecture video solution video QR code

11

Start with the relation $2x - 5y = 20$

Solve for x in terms of y.

lecture video lecture video lecture video solution video QR code

12

Start with the relation $2x - 5y = 20$

Graph the relation using y as the independent variable.

lecture video lecture video lecture video solution video QR code

13

Solve the relation or formula for the variable indicated:

$2a - 5b = 12$; solve for a

lecture video lecture video lecture video solution video QR code

14

Solve the relation or formula for the variable indicated:

$0.35m + 2.4n = 9$; solve for n

lecture video lecture video lecture video solution video QR code

15

Solve the relation or formula for the variable indicated:

`\dfrac{1}{2}p -\dfrac{2}{3}q = \dfrac{1}{4}`; solve for `p`

lecture video lecture video lecture video solution video QR code

16

In each set of equations, identify the equation that is not equivalent to the others.

`2a - b = 4; 2a=b +4; a = \frac{b}{2} +2`; and `b = 2a +4`

lecture video lecture video lecture video solution video QR code

17

In each set of equations, identify the equation that is not equivalent to the others.

`x + 2y = -6`; `y =\frac{x}{2} +3`; `x = 2y - 6`; and `x - 2y + 6 = 0`

lecture video lecture video lecture video solution video QR code

18

In each set of equations, identify the equation that is not equivalent to the others.

$4m - 3n + 2 = 4$; $3n = 4m + 2$; $4m = 3n - 2$; and $3n - 4m = 2$

lecture video lecture video lecture video solution video QR code

19

A cell-phone company offers a plan of $\$25$ per month and $\$0.10$ per minute of talk. The cost, C, in dollars, is given by the relation $C = 25 + 0.10n$, where n is the number of minutes used per month. Each month the company uses the exact air time to calculate ethane monthly bill.

Solve the relation for n in terms of C.

lecture video lecture video lecture video solution video QR code

20

Write a formula for h in terms of the base, b and the area, A when $A = \frac{1}{2}bh$.

lecture video lecture video lecture video solution video QR code

21

A cell-phone company offers a plan of `\$25` per month and `\$0.10` per minute of talk. The cost, `C`, in dollars, is given by the relation `C = 25 + 0.10n`, where `n` is the number of minutes used per month. Each month the company uses the exact air time to calculate ethane monthly bill.

Create a table of values for this new relation.

lecture video lecture video lecture video solution video QR code

22

A cell-phone company offers a plan of `\$25` per month and `\$0.10` per minute of talk. The cost, `C`, in dollars, is given by the relation `C = 25 + 0.10n`, where `n` is the number of minutes used per month. Each month the company uses the exact air time to calculate ethane monthly bill.

Graph this relation.

lecture video lecture video lecture video solution video QR code

23

Start with the relation `2x -5y = 20`

State the slope and intercepts of the graph.

lecture video lecture video lecture video solution video QR code

24

Start with the relation `2x -5y = 20`

Compare the slope of the two graphs. Justify your comparison.

lecture video lecture video lecture video solution video QR code

25

A cell-phone company offers a plan of `\$25` per month and `\$0.10` per minute of talk. The cost, `C`, in dollars, is given by the relation `C = 25 + 0.10n`, where `n` is the number of minutes used per month. Each month the company uses the exact air time to calculate ethane monthly bill.

- What is the independent variable? What is the dependent variable?
- Why might someone want to rearrange this relation and express it in terms of the cost?

lecture video lecture video lecture video solution video QR code

26

Solve the relation or formula for the variable indicated:

`I = prt`; solve for `r`

lecture video lecture video lecture video solution video QR code

27

Solve the relation or formula for the variable indicated:

`C = 2\pi r`; solve for `r`.

lecture video lecture video lecture video solution video QR code

28

Determine the height of the triangle if the area is `55 cm^2` and the base is 4 cm using `A = \frac{1}{2}bh`.

lecture video lecture video lecture video solution video QR code

29

Solve the relation or formula for the variable indicated:

`P = 2L + 2W`; solve for `L`

lecture video lecture video lecture video solution video QR code

30

Ben has `\$42.50` in quarters and dimes.

Write a linear relation expressing the total amount of money in terms of the number of quarters and dimes.

lecture video lecture video lecture video solution video QR code

31

Ben has `\$42.50` in quarters and dimes.

`25q + 10d = 4250` relates number of quarters to dimes when `q` is number of quarters and `d` is number of dimes.

Write an equation to express the number of quarters in terms of the number of dimes.

lecture video lecture video lecture video solution video QR code

32

Ben has `\$42.50` in quarters and dimes.

`25q + 10d = 4250` relates number of quarters to dimes when `q` is number of quarters and `d` is number of dimes.

Write an equation to express the number of dimes in terms of the number of quarters.

lecture video lecture video lecture video solution video QR code

33

Ben has `\$42.50` in quarters and dimes.

`25q + 10d = 4250` relates number of quarters to dimes when `q` is number of quarters and `d` is number of dimes.

Use one of your equation to determine the possible combinations of quarters and dimes Ben could have.

lecture video lecture video lecture video solution video QR code

34

A candy store is making a mixture of chocolate-coated almonds and `n` chocolate—coated raisins. The almonds cost $30/kg and the raisins cost $8/kg. The total cost of the mixture is to be $150.

a. Write a linear relation expressing the total cost in terms of the mass of almonds and the mass of raisins purchased.

b. Write an equation to express the mass of almonds in terms of the mass of raisins.

c. Write an equation to express the mass of raisins in terms of the mass of almonds.

d. Which combinations of almonds and raisins will cost exactly $150?

lecture video lecture video lecture video solution video QR code

35

When you multiply a number, `x`, by `k`, add `n`, and then divide by `r`, the answer is `w`.

- Write the relation that models this situation.

lecture video lecture video lecture video solution video QR code

36

When you multiply a number, x, by k, add n, and then divide by r, the answer is w.

The equivalent equation is

$$\displaystyle \frac{xk + n}{r } = w$$

Solve the relation for x.

lecture video lecture video lecture video solution video QR code

37

When you multiply a number, x, by k, add n, and then divide by r, the answer is w.

The equivalent equation is

$$\displaystyle \frac{xk + n}{r } = w$$

Which of the following is rearrangement of equation above?

How is rearranging a relation or formula for a particular variable similar to isolating a variable in a linear equation? How is it different?

lecture video lecture video lecture video solution video QR code

38

When you multiply a number, x, by k, add n, and then divide by r, the answer is w.

$$\displaystyle \frac{xk + n}{r } = w$$

- List the inverse operations that you would use, in the correct order, to isolate x.

lecture video lecture video lecture video solution video QR code

39

Solve for x.

```
\displaystyle \frac{5}{x} + 2y= 9
```

lecture video lecture video lecture video solution video QR code

40

Solve for x.

```
\displaystyle 3x^2 + 50 = 197
```

lecture video lecture video lecture video solution video QR code

41

Solve for x.

```
\displaystyle (x - 4)^2 - 12 = 24
```

lecture video lecture video lecture video solution video QR code

42

Solve for x.

```
\displaystyle \frac{3 + y}{x} = -4
```

lecture video lecture video lecture video solution video QR code

43

Solve for x.

```
\displaystyle \sqrt{x + 1} = 9
```

lecture video lecture video lecture video solution video QR code

44

Solve for x.

```
\displaystyle 2 - 8x^3 = 3
```

lecture video lecture video lecture video solution video QR code

45

The formula for determining the surface area of a cylinder is `SA = 2\pi r^2 + 2\pi r h`.

Solve for `h` in terms of `SA` and `r`.

lecture video lecture video lecture video solution video QR code

46

The formula for determining the surface area of a cylinder is `SA = 2\pi r^2 + 2\pi r h`.

Determine the height of a cylinder with radius 5 cm and surface area 300 `cm^2`.

lecture video lecture video lecture video solution video QR code

47

The formula for determining the surface area of a cylinder is `SA = 2\pi r^2 + 2\pi r h`.

Solve for `r` in terms of the other variables.

lecture video lecture video lecture video solution video QR code

0

Determine the point of intersection for system of linear equations shown below.

`y=\frac{1}{2}x+1` and `y=-x+4`

lecture video lecture video lecture video solution video QR code

1

Determine the point of intersection for system of linear equations shown below.

`y=x+1` and `y=4x-5`

lecture video lecture video lecture video solution video QR code

2

Determine the point of intersection for system of linear equations shown below.

`y=2x-1` and `y=-x+3`

lecture video lecture video lecture video solution video QR code

3

Determine the point of intersection for system of linear equations shown below.

`y=x` and `y=-x`

lecture video lecture video lecture video solution video QR code

4

Does each pair of lines intersect at the given point?

`(2, 3)`: `y=x+1`, `y=4x-5`

lecture video lecture video lecture video solution video QR code

5

Does each pair of lines intersect at the given point?

`(0, 2)`: `y=3x+2`, `y= 5x-1`

lecture video lecture video lecture video solution video QR code

6

Does each pair of lines intersect at the given point?

`(-1, -3)`: `y=4x+1`, `y=x-5`

lecture video lecture video lecture video solution video QR code

7

Given the lines `y=2` and `y=4x+9`,

- Determine the point of intersection using a graph.

lecture video lecture video lecture video solution video QR code

8

Given the lines `y=2` and `y=4x+9`,

- Create the linear equation that you would solve to determine the `x-` value of the point of intersection.

lecture video lecture video lecture video solution video QR code

9

To determine the point of intersection of $y=2x+5$ and $y=4x-3$, Elena wrote $2x+5=4x-3$ and solved the equation. Why is this a reasonable strategy for determining the point of intersection of the two lines?

lecture video lecture video lecture video solution video QR code

10

Bill wants to earn extra money selling lemonade in front of his house. It costs $\$1.20$ to start his business and each glass of lemonade costs $\$0.06$ to make. He plans to sell the lemonade for $\$0.10$ a glass.

(a) Write an equation that represents his cost.

(b) Write an equation that represents his revenue.

(c) Graph both equations on the same set of axes.

(d) What does the point of intersection mean in this case?

(e) Does Bill make a profit or lose money for:

- *i)* 20 glasses sold?
- *ii)* 35 glasses sold?
- *iii)* 50 glasses sold?

lecture video lecture video lecture video solution video QR code

11

Marie charges $\$3$ for every 4 bottles of water purchased from her store. She pays her supplier $\$0.25$ per bottle, plus $\$250$ for shelving and water delivery.

(a) Create a system of two linear equations to model this situation.

(b) How many bottles of water does she need to sell to break even?

lecture video lecture video lecture video solution video QR code

12

Determine the point of intersection of each pair of lines.

$y=-3x-2$ and $2x+3y=5$

lecture video lecture video lecture video solution video QR code

13

Determine the point of intersection of each pair of lines.

$2x+4y=7$ and $-x+0.75y=5$

lecture video lecture video lecture video solution video QR code

14

Determine the point of intersection of each pair of lines.

$0.25x-0.5y=1$ and $3.25x+4y=22.5$

lecture video lecture video lecture video solution video QR code

15

Determine the point of intersection of each pair of lines.

`y=3x+6` and `1=3x-y`

lecture video lecture video lecture video solution video QR code

16

Determine the point of intersection of each pair of lines:

`y-x=9` and `\displaystyle x-\frac{1}{6}y=-\frac{2}{3}`

lecture video lecture video lecture video solution video QR code

17

Determine the point of intersection of each pair of lines:

`2x-y=0` and `y=5+2x`

lecture video lecture video lecture video solution video QR code

18

Determine the point of intersection of each pair of lines:

`5x+8y-12=0` and `-5x+16y-12=0`

lecture video lecture video lecture video solution video QR code

19

Determine the point of intersection of each pair of lines:

`4x+y-2=0` and `8x+2y-4=0`

lecture video lecture video lecture video solution video QR code

20

Determine the point of intersection of each pair of lines:

`\frac{1}{3}x-\frac{2}{5}y+\frac{1}{4}=0` and `2x-\frac{1}{7}y+\frac{1}{2}=0`

lecture video lecture video lecture video solution video QR code

21

Determine the point of intersection of each pair of lines:

`5x-2.5y=10` and `3.1x+4y=6.2`

lecture video lecture video lecture video solution video QR code

22

Given the relation `x+y=5`, determine a second relation that:

- intersects `x+y=5` at (2, 3)
- `does\ not` intersect `x+y=5`

lecture video lecture video lecture video solution video QR code

23

Given the relation `x+y=5`, determine a second relation that:

- `does\ not` intersect `x+y=5`

lecture video lecture video lecture video solution video QR code

24

The sum of two integers is 42. The difference of the two numbers is 17.

(a) Create a system of linear equations to model each statement above.

(b) Determine the integers using a graph.

lecture video lecture video lecture video solution video QR code

25

Mike has `\$9.85` in dimes and quarters. If there are 58 coins altogether, how many dimes and how many quarters does Mike have?

lecture video lecture video lecture video solution video QR code

26

Does each pair of lines intersect at the given point?

`(1, -1): y=5x-4, y=2x-3`

lecture video lecture video lecture video solution video QR code

27

Determine the point of intersection of each pair of lines:

$y=2$ and $y=5$

lecture video lecture video lecture video solution video QR code

28

Determine the point of intersection of each pair of lines:

$y=-4$ and $x=1$

lecture video lecture video lecture video solution video QR code

29

Why does a system of two linear equations usually have only one solution for each of the two variables?

lecture video lecture video lecture video solution video QR code

30

(a) Determine the point(s) of intersection of `y=2x^2` and `y=8` using a graph.

(b) Create and solve the equation that you would use to determine where the point of intersection lies.

(c) Are your solutions for parts (a) and (b) the same? Explain.

lecture video lecture video lecture video solution video QR code

0

Write the linear system that corresponds to each equation.

```
4x - 5 = 3
```

lecture video lecture video lecture video solution video QR code

1

Write the linear system that corresponds to each equation.

```
\frac{1}{2}x + 3 = 5
```

lecture video lecture video lecture video solution video QR code

2

Solve each of the following systems of equations using a graph.

- `3x - 4y = -12` and `2x - 3y = 64`

lecture video lecture video lecture video solution video QR code

3

Write the linear system that corresponds to each equation.

```
-2(x -3) = -4
```

lecture video lecture video lecture video solution video QR code

4

Write the linear system that corresponds to each equation.

```
\frac{1}{4}(x + \frac{2}{5}) = 0
```

lecture video lecture video lecture video solution video QR code

5

Solve each equation using algebra.

```
3x + 6 =12
```

lecture video lecture video lecture video solution video QR code

6

Solve each equation using algebra.

$4x - 8 = 12$

lecture video lecture video lecture video solution video QR code

7

Solve each equation using algebra.

$5 - 2x = 11$

lecture video lecture video lecture video solution video QR code

8

Solve each equation using algebra.

$-6x + 8 = -10$

lecture video lecture video lecture video solution video QR code

9

Determine the x-intercept of each of the following.

$y = -5x + 20$

lecture video lecture video lecture video solution video QR code

10

Determine the x-intercept of each of the following.

$2x + y = 10$

lecture video lecture video lecture video solution video QR code

11

A promoter is holding a video dance. Tickets cost \$15 per person, and he has given away 10 free tickets to radio stations.

- Create the linear relation that models the money the promoter will earn in ticket sales in terms of the number of people attending the dance.

lecture video lecture video lecture video solution video QR code

12

A promoter is holding a video dance. Tickets cost `\$15` per person, and he has given away 10 free tickets to radio stations.

Here is the linear equation that represents the above. `\displaystyle R = 15n - 150`

- Graph the linear relation.

lecture video lecture video lecture video solution video QR code

13

For formula `C =\frac{5}{9}(F- 32)` is used to convert Fahrenheit temperatures to Celsius.

Determine the Celsius temperature when `F = 90`

lecture video lecture video lecture video solution video QR code

14

For formula `C =\frac{5}{9}(F- 32)` is used to convert Fahrenheit temperatures to Celsius.

Determine the Fahrenheit temperature when `C = 25`.

lecture video lecture video lecture video solution video QR code

15

A promoter is holding a video dance. Tickets cost `\$15` per person, and he has given away 10 free tickets to radio stations.

Here is the linear equation that represents the above. `\displaystyle R = 15n - 150` and below is the graph

- Write the equation you would use to determine how many people attended if ticket sales were only \$600. Estimate the solution using the graph.

lecture video lecture video lecture video solution video QR code

16

A promoter is holding a video dance. Tickets cost `\$15` per person, and he has given away 10 free tickets to radio stations.

Find how many people bought the ticket if he made `\$600`?

You may use the equation below.

```
\displaystyle R = 15n - 150
```

lecture video lecture video lecture video solution video QR code

17

Erin joins a CD club. The first 10 CDs are free, but after that she pays `\$15.95` for each CD she orders.

- How much would she pay for 15 CDs?

lecture video lecture video lecture video solution video QR code

18

Erin joins a CD club. The first 10 CDs are free, but after that she pays `\$15.95` for each CD she orders.

It can be modelled by `\displaystyle Cost = 15.95x - 159.5`

- Erin receives her first order of CDs with a bill for `\$31.90`. Create and solve an equation to determine how many she ordered.

lecture video lecture video lecture video solution video QR code

19

Erin joins a CD club. The first 10 CDs are free, but after that she pays `\$15.95` for each CD she orders.

- Write an expression for the cost of `x` CDs.

lecture video lecture video lecture video solution video QR code

20

Solve the equation.

`9x + 2 = 11x -10`

lecture video lecture video lecture video solution video QR code

21

Solve the equation.

```
-\frac{4}{5}x + \frac{2}{3}= 1\frac{3}{4}x +2
```

lecture video lecture video lecture video solution video QR code

22

Solve the equation.

```
\dfrac{(4+x)}{3} +4 = \dfrac{x - 6}{2} - 6
```

lecture video lecture video lecture video solution video QR code

23

Solve the equation.

```
-3(x + 1) -2 = 4x - 5(x - 3)
```

lecture video lecture video lecture video solution video QR code

24

Is $x = 3$ the solution to $5(3x - 2) = 4 - 10(x + 1)$? Explain how you know.

lecture video lecture video lecture video solution video QR code

25

Determine the length of each base for the trapezoids below if they have the same area.

lecture video lecture video lecture video solution video QR code

26

Solve each equation for the variable indicated.

$P = 2l + 2w; l$

lecture video lecture video lecture video solution video QR code

27

Solve each equation for the variable indicated.

```
A = P + Prt; t
```

lecture video lecture video lecture video solution video QR code

28

Solve each equation for the variable indicated.

```
V =\pi r^2h; h
```

lecture video lecture video lecture video solution video QR code

29

Solve each equation for the variable indicated.

```
A x + By = C; y
```

lecture video lecture video lecture video solution video QR code

30

For formula $C =\frac{5}{9}(F- 32)$ is used to convert Fahrenheit temperatures to Celsius.

Solve for F in terms of C.

lecture video lecture video lecture video solution video QR code

31

Solve for y in terms of x.

$8x - 4y =12$

lecture video lecture video lecture video solution video QR code

32

Solve for y in terms of x.

$5x = 10y - 20$

lecture video lecture video lecture video solution video QR code

33

Solve for `y` in terms of `x`.

```
3x - 3y -9 = 0
```

lecture video lecture video lecture video solution video QR code

34

Solve for `y` in terms of `x`.

```
\frac{x}{4} + \frac{y}{2} =2
```

lecture video lecture video lecture video solution video QR code

35

Jose has `\$32.00` in loonies and toonies.

- Write a linear relation expressing the total amount of money in terms of the number of loonies and toonies..

lecture video lecture video lecture video solution video QR code

36

Jose has `\$32.00` in loonies and toonies.

- Write an equation to express the number of toonies in terms of the number of loonies.

lecture video lecture video lecture video solution video QR code

37

Jose has `\$32.00` in loonies and toonies.

- Use your equation to determine which one of the following is a possible combination of coins Josh could have.

lecture video lecture video lecture video solution video QR code

38

Jose has `\$32.00` in loonies and toonies.

- Is it possible that Jose has 13 toonies and 5 loonies? Explain.

lecture video lecture video lecture video solution video QR code

39

Solve the equation $4 = -2x -3$ byI graphing $y = -2x -3$ and $y =4$. The x-value where the two lines intersect is the solutions.

a) What is the solution to this equation based on the graph?

b) Verify the solution using algebra.

lecture video lecture video lecture video solution video QR code

40

Solve the equation $4 = -2x -3$ byI graphing $y = -2x -3$ and $y =4$. The x-value where the two lines intersect is the solutions.

How could you use this strategy to solve $3x -4 = 2x + 3$?

lecture video lecture video lecture video solution video QR code

41

Fitness centre A has a monthly membership fee of $\$90$. Members pay $5 to take an aerobics class. At Fitness centre B, there is no membership fee, but clients pay $\$10$ per class.

a) Write a linear relation for the yearly cost in terms of the number of aerobics classes.

b) Graph the equations on the same set of axes.

c) State the point of intersection.

d) What does the point of intersection mean in this case?

e) How would you advise someone who is trying to choose between the two fitness clubs?

lecture video lecture video lecture video solution video QR code

42

The Video Stream you can watch movies for `\$ 3.00/month` each and has no membership fee. At Rent Stream you can view movies for `\$2/month` but has a `\$15` membership fee.

a) Write an equation for each situation.

b) Graph both equations on the same set of axes. Find the point of intersection.

c) What does the point of intersection mean in this case?

d) What advice would you give to someone who is deciding which video store to use?

lecture video lecture video lecture video solution video QR code

0

a) Explain how each of the following illustrates a valid approach to solving the equation `\displaystyle 3.50 x+2.70=6.55`

b) Which method leads to an exact solution?

lecture video lecture video lecture video solution video QR code

1

Solve and verify each equation.

`\displaystyle -2 a+5=3`

lecture video lecture video lecture video solution video QR code

2

Solve and verify each equation.

`\displaystyle 4-2 x=8`

lecture video lecture video lecture video solution video QR code

3

Solve and verify each equation.

$\displaystyle \frac{5}{6} x-\frac{3}{4}=\frac{1}{4}$

lecture video lecture video lecture video solution video QR code

4

Solve and verify each equation.

$\displaystyle 3(x-1)+2(3 x+1)=2$

lecture video lecture video lecture video solution video QR code

5

Rearrange each equation to solve for the variable indicated.

$\displaystyle -3 x+2 y=6$; solve for $\displaystyle y$

lecture video lecture video lecture video solution video QR code

6

Rearrange each equation to solve for the variable indicated.

`\displaystyle y=3 x+2` ; solve for `\displaystyle x` .

lecture video lecture video lecture video solution video QR code

7

David has two part-time jobs. He earns `\displaystyle \$ 14 / \mathrm{h}` at one and `\displaystyle \$ 11 / \mathrm{h}` at the other. David wants to know how many hours it will take him to earn `\displaystyle \$ 1000`

a) Find two combinations of the numbers of hours David could work at each job to earn `\displaystyle \$ 1000` .

b) Graph the relation.

lecture video lecture video lecture video solution video QR code

8

Justin charges `\displaystyle \$ 21` per linear foot to install a wood fence. It costs him `\displaystyle \$ 19` per linear foot plus `\displaystyle \$ 4000` to purchase materials and hire installers each month. How many linear feet of fencing would he need to install each month to break even?

lecture video lecture video lecture video solution video QR code

9

Determine the point of intersection for each system of linear equations.

`\displaystyle y=7 x-9` and `\displaystyle y=-x-1`

lecture video lecture video lecture video solution video QR code

10

Determine the point of intersection for each system of linear equations.

`\displaystyle -x-2 y=-3` and `\displaystyle 3 x+y=-2`

lecture video lecture video lecture video solution video QR code

Chapter 5 Lines in Coordinate System

0

Match each linear equation with the graph that best represents it.

```
\displaystyle \begin{array}{ccccc} &a) & y = -3x + 5 &c) & y=\frac{5}{8}x &e) &x = 5\\
&b) & y = 7x - 4 &d) & y=-\frac{1}{4}x - 4 &f) & y = 3\\ \end{array}
```

lecture video lecture video lecture video solution video QR code

1

Consider the lines formed by each of the following equations.

```
\displaystyle \begin{array}{cccccc} &a) & y = -2x + 8 & b) & y = \frac{1}{3}x + 1 \\ & &
y = -\frac{15}{2}x + 3 & & y = 3x - 9\\ & & y = -\frac{1}{2}x - 7 & & y = x + 5\\
\end{array}
```

- i) Identify the steepest and the least steep line in each of parts a) and b).
- ii) Use the slope and y-intercept to sketch the graphs to verify your answers in i).

lecture video lecture video lecture video solution video QR code

2

a) What linear equation represents the x-axis?

b) What linear equation represents the y-axis?

lecture video lecture video lecture video solution video QR code

0

Express the equation $5x + 6y + 15 = 0$ in the form $y = mx + b$.

lecture video lecture video lecture video solution video QR code

1

Express each of the following equations in the form $y = mx + b$. Then, state the slope and y-intercept of each line.

$8x + 5y = 0$

lecture video lecture video lecture video solution video QR code

2

The dependent variable is d in each of the following equations. Isolate d to determine the d—intercept and the slope of each line.

$4t + 3d = 9$

lecture video lecture video lecture video solution video QR code

3

The dependent variable is d in each of the following equations. Isolate d to determine the d-intercept and the slope of each line.

`8d - 2h + 16 = 0`

lecture video lecture video lecture video solution video QR code

4

Show that `3x - 8y + 5 = 0` and `y =\frac{3}{8}x + \frac{5}{8}` represents the same line.

lecture video lecture video lecture video solution video QR code

5

a) Determine the slope and y-intercept for each linear equation.

- i) 3x + 4y - 8 = 0
- ii) 2x + 5y - 9 = 0
- iii) 4x - 3y = -12

b) An equation is given in the form `Ax+By+C=0`.

- i) What is the slope of this line?
- ii) What is the y-intercept of this line?

lecture video lecture video lecture video solution video QR code

6

A room contains three-legged stools and four-legged chairs. There are 48 legs altogether.

a) Write an equation to represent the relationship between the number of stools, the number of chairs, and the total number of legs.

b) How many stools could there be?

lecture video lecture video lecture video solution video QR code

7

Amanda plans to make chocolate-chip cookies and oatmeal cookies for a bake sale. The chocolate-chip cookies use three eggs per batch. The oatmeal cookies use two eggs per batch. If Amanda makes 6 oatmeal cookies, how many chocolate-chip cookies did she make? Show your work.

lecture video lecture video lecture video solution video QR code

8

Express each of the following equations in the form $y = mx + b$. Then, state the slope and y-intercept of each line.

$4x - 3y = 24$

lecture video lecture video lecture video solution video QR code

9

Express each of the following equations in the form `y = mx + b`. Then, state the slope and y-intercept of each line.

`2x + 5y = 15`

lecture video lecture video lecture video solution video QR code

10

Express each of the following equations in the form `y = mx + b`. Then, state the slope and y-intercept of each line.

`3x - 6y - 14 = 0`

lecture video lecture video lecture video solution video QR code

11

Express each of the following equations in the form `y = mx + b`. Then, state the slope and y-intercept of each line.

`4x + 7y - 11 = 0`

lecture video lecture video lecture video solution video QR code

12

Express each of the following equations in the form `y = mx + b`. Then, state the slope and y-intercept of each line.

`2.4x + 1.5y = -3`

lecture video lecture video lecture video solution video QR code

13

Use the slope and y-intercept to sketch the graphs of each of the linear relations.

`4x - 3y = 24`

lecture video lecture video lecture video solution video QR code

14

Use the slope and y-intercept to sketch the graphs of each of the linear relations.

`2x + 5y = 15`

lecture video lecture video lecture video solution video QR code

15

Use the slope and y-intercept to sketch the graphs of each of the linear relations.

$3x - 6y - 14 = 0$

lecture video lecture video lecture video solution video QR code

16

Use the slope and y-intercept to sketch the graphs of each of the linear relations.

$4x + 7y - 11 = 0$

lecture video lecture video lecture video solution video QR code

17

Use the slope and y-intercept to sketch the graphs of each of the linear relations.

$2.4x + 1.5y = -3$

lecture video lecture video lecture video solution video QR code

18

Without graphing, predict whether each of the following lines will rise or fall to the right. How do you know?

- `2x + 3y = 5`

lecture video lecture video lecture video solution video QR code

19

Without graphing, predict whether each of the following lines will rise or fall to the right. How do you know?

- `2x + 5y = 15`

lecture video lecture video lecture video solution video QR code

20

Without graphing, predict whether each of the following lines will rise or fall to the right. How do you know?

- `\frac{x}{2} - 3y = 6`

lecture video lecture video lecture video solution video QR code

21

State whether each of the following lines will rise or fall to the right by graphing it.

$2x + 3y = 5$

lecture video lecture video lecture video solution video QR code

22

State whether each of the following lines will rise or fall to the right by graphing it.

$x - 4y + 10= 0$

lecture video lecture video lecture video solution video QR code

23

State whether each of the following lines will rise or fall to the right by graphing it.

$3x + 5y - 8 = 0$

lecture video lecture video lecture video solution video QR code

24

State whether each of the following lines will rise or fall to the right by graphing it.

```
2.5x - 15y = 20
```

lecture video lecture video lecture video solution video QR code

25

State whether each of the following lines will rise or fall to the right by graphing it.

```
\frac{x}{2} - 3y = 6
```

lecture video lecture video lecture video solution video QR code

26

The dependent variable is d in each of the following equations. Isolate d to determine the d-intercept and the slope of each line.

```
15 + 5k - 6d = 0
```

lecture video lecture video lecture video solution video QR code

27

Use the slope and y-intercept to sketch the graphs of each of the linear relations.

$8x + 5y = 0$

lecture video lecture video lecture video solution video QR code

28

Without graphing, predict whether each of the following lines will rise or fall to the right. How do you know?

- $x - 4y + 10= 0$

lecture video lecture video lecture video solution video QR code

29

Without graphing, predict whether each of the following lines will rise or fall to the right. How do you know?

- $2.5x - 15y = 20$

lecture video lecture video lecture video solution video QR code

30

Show that $\displaystyle y = \frac{2}{3}x + \frac{7}{3}$ and $x = \frac{3}{2}y -\frac{7}{2}$ represent the same line.

lecture video lecture video lecture video solution video QR code

31

A farmer wants to build new enclosures for geese, ducks, and chickens. He has $\displaystyle 40 \mathrm{~m}$ of fencing to build the three identical, adjacent enclosures.

a) Write an equation to represent the amount of fencing required.

b) Rearrange your equation to isolate one of the variables.

c) Graph the relationship.

d) Suggest three possible sets of dimensions for the farmer's enclosures.

lecture video lecture video lecture video solution video QR code

32

Evan spend a total of $18 on gourmet jellybeans and chocolate-covered almonds. The jellybeans cost $12/kg. The almonds cost $21/kg.

(a) Write an equation to represent Evan's purchases.

(b) Isolate the variable for the quantity of jellybeans in your equation.

(c) If Evan bought 250 g of almonds, how many grams of jellybeans did he buy?

(d) If Evan bought 100g of almonds, how many grams of jellybeans did he buy?

lecture video lecture video lecture video solution video QR code

33

Brenda has a total of `41` loonies and toonies in her piggy bank. Their total value is `\$59`.

(a) Write one equation for the total number of coins and a second equation for the total value.

(b) Graph both lines.

(c) Determine the coordinates of the point of intersection of the lines.

lecture video lecture video lecture video solution video QR code

34

Textbooks have an average mass of 0.9kg and notebooks have an average mass of 0.6kg. To avoid straining his back, Stephen never puts more than 6 kg of books in his backpack.

(a) Write an equation to represent the relationship between the number of each type of book and the total maximum mass.

(b) Isolate one of the variables in your equation from part a).

(c) Determine all possible combination of textbooks and notebooks that would have a total mass of 6 kg.

lecture video lecture video lecture video solution video QR code

35

Do `\displaystyle y = \frac{2}{3}x + \frac{1}{3}` and `2x + 3y + 1 = 0` represent the same line? How do you know?

lecture video lecture video lecture video solution video QR code

0

Calculate the slope of the line through each pair of points.

`A(3, 8)` and `B(10, 15)`

lecture video lecture video lecture video solution video QR code

1

Calculate the slope of the line through the pair of points.

`I(3.5, 4.8)` and `J(1.4, 6.2)`

lecture video lecture video lecture video solution video QR code

2

Calculate the slope of the line through the pair of points.

`K(32, 630)` and `L(58, 1020)`

lecture video lecture video lecture video solution video QR code

3

Calculate the slope of the line through each pair of points.

`C(9, -2)` and `D(8, 4)`

lecture video lecture video lecture video solution video QR code

4

Calculate the slope of the line through the pair of points.

`A(-2, 5)` and `B(4, -8)`

lecture video lecture video lecture video solution video QR code

5

Calculate the slope of the line through the pair of points.

`C(0, 5)` and `D(-2, 3)`

lecture video lecture video lecture video solution video QR code

6

Calculate the slope of the line through the pair of points.

`E(5, 10)` and `F(5, -4)`

lecture video lecture video lecture video solution video QR code

7

Calculate the slope of the line through the pair of points.

`G(-7, 8)` and `H(4, 8)`

lecture video lecture video lecture video solution video QR code

8

(a) Plot the points `(-3, 8)` and `(5, 8)` and draw the line that passes through them.

(b) Calculate the slope of the line using the slope formula.

(c) What can you conclude about the slope of a horizontal line?

lecture video lecture video lecture video solution video QR code

9

(a) Plot the points `(4, 10)` and `(4, -1)` and draw the line that passes through them.

(b) Calculate the slope of the line using the slope formula.

(c) What can you conclude about the slope of a vertical line?

lecture video lecture video lecture video solution video QR code

10

The point `(-2, -3)` lies on a line with slope `\frac{2}{3}`. Determine the `y`-coordinate of the point on the line with `x`-coordinate 13.

lecture video lecture video lecture video solution video QR code

11

Write the coordinates of one other point that would be on the line passing through the point A `(2, 5)` with each of the slope value of

`-\frac{1}{4}`

lecture video lecture video lecture video solution video QR code

12

Write the coordinates of one other point that would be on the line passing through the point A $(2, 5)$ with each of the slope value of

$\frac{8}{3}$

lecture video lecture video lecture video solution video QR code

13

Write the coordinates of one other point that would be on the line passing through the point A $(2, 5)$ with each of the slope value of

-4

lecture video lecture video lecture video solution video QR code

14

Write the coordinates of one other point that would be on the line passing through the point A $(2, 5)$ with each of the slope value of

0

lecture video lecture video lecture video solution video QR code

15

For the points `J, K`, and `L`, the slope of segment `\mathrm{\overline{JK}}` is -4 and the slope of segment `\mathrm{\overline{KL}}` is -2. Explain how you know that `J, K`, and `L` are not collinear.

lecture video lecture video lecture video solution video QR code

16

Determine whether the given points are collinear.

`A(-8, 0)`, `B(-6, 1)` and `C(4, 6)`

lecture video lecture video lecture video solution video QR code

17

Determine whether the given points are collinear.

`D(-5, 17)`, `E(-12, 40)`, and `F(-42, 128)`

lecture video lecture video lecture video solution video QR code

18

Determine whether the given points are collinear.

$G(-30, -70)$, $H(-15, -38)$, and $I(17, 26)$

lecture video lecture video lecture video solution video QR code

19

Determine whether the given points are collinear.

$J(-9, 1)$, $K(-12, 3)$, and $L(6, -9)$

lecture video lecture video lecture video solution video QR code

20

Determine the value of k if the points $X(3, 2)$, $Y(k, 8)$, and $Z(k + 7, 29)$ are collinear.

lecture video lecture video lecture video solution video QR code

21

Consider the points A `(7, k)`, B `(11, 4)`, and C `(13, 1 - 3k)`.

If A, B, and C are collinear, determine the value of `k`.

lecture video lecture video lecture video solution video QR code

22

Consider the points A `(7, k)`, B `(11, 4)`, and C `(13, 1 - 3k)`.

- If A, B, and C are collinear, determine the coordinates of A and C.
- Determine a possible value of k for which the points would not be collinear.

lecture video lecture video lecture video solution video QR code

23

a) What is the slope of a line that is horizontal.

b) What is the slope of a line that is vertical.

lecture video lecture video lecture video solution video QR code

24

How can you tell from the coordinate of two points if the line passing through them is horizontal, vertical, or slanted?

lecture video lecture video lecture video solution video QR code

25

Nancy was cycling toward his home. After 2 h of cycling he was 55 km from home, and after 4.5 h of cycling he was 17.5 km from home. Assuming he was cycling at a constant rate, how fast was she cycling?

lecture video lecture video lecture video solution video QR code

26

A house worth `\$150 000` in 1999 increased by a constant rate to its value of `\$255 000` in 2007. Calculate the home's annual rate of increase in value.

lecture video lecture video lecture video solution video QR code

27

If you hire Damian Delicious Dinners to cater a party, it will cost `\$450` for 20 guests and `\$675` for 35 guests. If the company charged a fixed rate per guest, calculate the cost per person.

lecture video lecture video lecture video solution video QR code

28

```
\displaystyle \begin{array}{|l|r|r|r|r|r|} \hline Hours Worked & 20 & 25 & 30 & 40 & 50
\\ \hline Weekly Earnings (\$) & 390 & 450 & 510 & 630 & 750 \\ \hline \end{array}
```

a) Plot the following data so that x-axis hours worked and y-axis is Weekly earnings.

b) Find the slope and state the meaning of the slope.

c) How many hours do you need to work to make $900.

lecture video lecture video lecture video solution video QR code

29

lecture video lecture video lecture video solution video QR code

30

```
\displaystyle \begin{array}{l|c|c} Name & Vert. Drp (ft) & lengh of Sope(ft) \\ \hline
snows & 256 & 890 \\ Bean & 480 & 4824 \\ Vortex & 510 & 3438 \end{array}
```

Which slope has the steepest slope?

lecture video lecture video lecture video solution video QR code

31

Which line has a sloe between 1.1 and 10?

lecture video lecture video lecture video solution video QR code

32

For each situation write an equation of the line in the form `y=mx + b`.

- The slope is 5 and the y-intercept is 2.

lecture video lecture video lecture video solution video QR code

33

For each situation write an equation of the line in the form `y=mx + b`.

- The slope is -4 and the point `(4, -3)` is one the line.

lecture video lecture video lecture video solution video QR code

34

For each situation write an equation of the line in the form `y=mx + b`.

- The slope is `\frac{2}{3}` and the point `(6, 4)` is on the line.

lecture video lecture video lecture video solution video QR code

35

For each situation write an equation of the line in the form `y=mx+b`.

- The line is vertical and passes through the point (2, 5).

lecture video lecture video lecture video solution video QR code

36

For each situation write an equation of the line in the form `y=mx + b`.

- The line is horizontal and passes through (-1, -2).

lecture video lecture video lecture video solution video QR code

0

Identify the slope and y-intercept of the line.

a. `y = 4x - 5`

b. `y = -2x +3`

c. `y =\frac{3}{7}x - \frac{2}{3}`

lecture video lecture video lecture video solution video QR code

1

Describe each line using words: *horizontal, vertical, rising to the right, or falling to the right*.

a. `y = -3x + 5`

b. `y = -2`

c. `y = \frac{2}{3}`

d. `x = 4.5`

e. `y = 4x - 1`

f. `y = \frac{3}{4}x + \frac{1}{3}`

lecture video lecture video lecture video solution video QR code

2

Order each of the following sets of lines based on slope, from closest to horizontal to closest to vertical.

1. `y = \frac{2}{3}x - 7`
2. `y = 2.5x - 3.7`
3. `y = \frac{9}{2}x + 4`

lecture video lecture video lecture video solution video QR code

3

Order each of the following sets of lines based on slope, from closest to horizontal to closest to vertical.

1. `y = -\dfrac{1}{5}x + 8`
2. `y = -6x - \frac{5}{8}`
3. `y = -2x + 4`

lecture video lecture video lecture video solution video QR code

4

Suppose each equation set represents ski hill.

a) Which two equation could not possibly represent ski hills? Why?

b) Organize the hills to: *Bunny Hills(least steep), Intermediate Hills(moderately steep), and Double Black Diamond Hills(steepest)*.

Set 1

1. `y = x`
2. `y = 7`
3. `x = 2`

Set 2

1. `y = \frac{2}{3}x - 7`
2. `y = 2.5x - 3.7`
3. `y = \frac{9}{2}x + 4`

Set 3

1. `y = -\frac{1}{5}x + 8`
2. `y = -6x - \frac{5}{8}`
3. `y = -2x + 4`

lecture video lecture video lecture video solution video QR code

5

Sketch the graph using slope and y-intercept.

`y = 2x - 4`

lecture video lecture video lecture video solution video QR code

6

Sketch the graph using slope and y-intercept.

$y = -\frac{1}{4}x + 3$

lecture video lecture video lecture video solution video QR code

7

Order each of the following sets of lines based on slope, from closest to horizontal to closest to vertical.

1. $y = x$
2. $y = 7$
3. $x = 2$

lecture video lecture video lecture video solution video QR code

8

Sketch the graph using slope and y-intercept.

$y = -\frac{7}{6}x$

lecture video lecture video lecture video solution video QR code

9

Rewrite the following in the form `y = mx + b`.

`6x -3y - 15 =0`

lecture video lecture video lecture video solution video QR code

10

Rewrite the following in the form `y = mx + b`.

`3x + 6y + 12 = 0`

lecture video lecture video lecture video solution video QR code

11

Rewrite the following in the form `y = mx + b`.

`2x - 8y = 10`

lecture video lecture video lecture video solution video QR code

12

Rewrite the following in the form `y = mx + b`.

`y - 10 = 0`

lecture video lecture video lecture video solution video QR code

13

Rewrite the following in the form `y = mx + b`.

`4x + y - 9 = 0`

lecture video lecture video lecture video solution video QR code

14

Rewrite the following in the form `y = mx + b`.

`2x -3y = -1`

lecture video lecture video lecture video solution video QR code

15

Movie tickets are `\$8` each and concert tickets are `\$12` each. Andrew spent a total of `\$100` on movie and concert tickets.

a. Write an equation to represent the total cost for movie and concert tickets.

b. Rewrite the equation in the form `y =mx + b`

c. Determine which of the following is a possible combinations of movie and concert tickets that Andrew might have bought.

lecture video lecture video lecture video solution video QR code

16

Determine the slope.

lecture video lecture video lecture video solution video QR code

17

Determine the slope.

lecture video lecture video lecture video solution video QR code

18

Determine the slope.

lecture video lecture video lecture video solution video QR code

19

Determine the slope.

lecture video lecture video lecture video solution video QR code

20

Determine the slope.

lecture video lecture video lecture video solution video QR code

21

Determine the slope.

lecture video lecture video lecture video solution video QR code

22

Calculate the slope of the line passing through the pair of points.

$A(3, 8)$ and $B(5, 7)$

lecture video lecture video lecture video solution video QR code

23

Calculate the slope of the line passing through the pair of points.

$C(8, 9)$ and $D(-2, -2)$

lecture video lecture video lecture video solution video QR code

24

Calculate the slope of the line passing through the pair of points.

`E(-8, 4)` and `F(4, -8)`

lecture video lecture video lecture video solution video QR code

25

Calculate the slope of the line passing through the pair of points.

`I(0, 0)` and `J(-3, -5)`

lecture video lecture video lecture video solution video QR code

26

Calculate the slope of the line passing through the pair of points.

`M(0, 4)` and `N(-3, 4)`

lecture video lecture video lecture video solution video QR code

27

Calculate the slope of the line passing through the pair of points.

`P(-2, -1)` and `Q(-2, -9)`

lecture video lecture video lecture video solution video QR code

28

Determine if the points are collinear.

`A(-3, -2)`, `B(-2, 1)`, and `C(2,10)`

lecture video lecture video lecture video solution video QR code

29

Determine if the points are collinear.

`D(7, -1)`, `E(6, 5)`, and `F(2, 1)`

lecture video lecture video lecture video solution video QR code

30

Determine if the points are collinear.

`G(-7, -5), H(-2,10)`, and `I(-9, -11)`

lecture video lecture video lecture video solution video QR code

31

Determine if the points are collinear.

`J(8, 9), K(-6, 7)`, and `L(24, 11)`

lecture video lecture video lecture video solution video QR code

32

Point A has coordinates `A(3, k)`, and the slope AB is `\frac{2}{5}`. Determine the value of `k` for each point B.

`B(7, -2)`

lecture video lecture video lecture video solution video QR code

33

Point A has coordinates `A(3, k)`, and the slope of AB is `\frac{2}{5}`. Determine the value of `k` for each point B.

`B(13, 5)`

lecture video lecture video lecture video solution video QR code

34

Point A has coordinates `A(3, k)`, and the slope of AB is `\frac{2}{5}`. Determine the value of `k` for each point B.

`B(-2, 2)`

lecture video lecture video lecture video solution video QR code

35

Point A has coordinates `A(3, k)`, and the slope of AB is `\frac{2}{5}`. Determine the value of `k` for each point B.

`B(9, 10)`

lecture video lecture video lecture video solution video QR code

36

A catering company charges $550 for 20 guests and $775 for 35 guests. What is the cost per person?

lecture video lecture video lecture video solution video QR code

37

At the end of July, the Robillard family headed home after a vacation. The Robillards were 750 km from home when they started out, but 4 h later they were only 394 km from home. They didn't stop and they maintained a constant speed. How fast were they driving?

lecture video lecture video lecture video solution video QR code

0

Find the equation from the given information

- Slope: 3
- y-intercept: 5
- Equation:

lecture video lecture video lecture video solution video QR code

1

`m = -5`, y-intercept is 3, find the equation.

lecture video lecture video lecture video solution video QR code

2

Determine the equation of the line described below.

passing through the point `A(0 ,4)`, with a slope of `-\frac{8}{9}`

lecture video lecture video lecture video solution video QR code

3

Find the missing values from the given information

- Slope:
- y-intercept:
- Equation: `y = 5x + 1`

lecture video lecture video lecture video solution video QR code

4

find m and,y-int when equation of the line is `y = \frac{4}{3}x -2`

lecture video lecture video lecture video solution video QR code

5

find m and,y-int when equation of the line is `y = \frac{1}{2}x`

lecture video lecture video lecture video solution video QR code

6

Match each equation to its corresponding graph.

$x = -2$

lecture video lecture video lecture video solution video QR code

7

Match each equation to its corresponding graph.

$y = -2$

lecture video lecture video lecture video solution video QR code

8

Match each equation to its corresponding graph.

$x - 2y = 4$

lecture video lecture video lecture video solution video QR code

9

Match each equation to its corresponding graph.

$y = -\frac{4}{3}x + 3$

lecture video lecture video lecture video solution video QR code

10

Determine the equation of the line with the following characteristics

has slope of -2 and passes through the point $A(5, 2)$

lecture video lecture video lecture video solution video QR code

11

Determine the equation of the line described below.

passing through the point $A(3 ,-5)$, with a slope of $\frac{1}{5}$

lecture video lecture video lecture video solution video QR code

12

Determine the equation of the line with the following characteristics

passes through the points `B(4, 6)` and `C(1, -3)`

lecture video lecture video lecture video solution video QR code

13

Determine the equation of the line described below.

has an x-intercept of 6 and passes through the point `(6, 4)`

lecture video lecture video lecture video solution video QR code

14

Determine the equation of each line passing each pair of points.

`A(1, 9), B(1, -7)`

lecture video lecture video lecture video solution video QR code

15

Determine the equation of each line passing each pair of points.

C(-8, -3), D(8, 27)

lecture video lecture video lecture video solution video QR code

16

Determine the equation of each line passing each pair of points.

E(-12, 7), F(4, 7)

lecture video lecture video lecture video solution video QR code

17

Determine the equation of each line passing each pair of points.

G(6, 18), H(-12, 3)

lecture video lecture video lecture video solution video QR code

18

Determine the equation of each line passing each pair of points.

`I(0, 5)` and `J(0, 12)`

lecture video lecture video lecture video solution video QR code

19

Determine the equation of each line passing each pair of points.

`K(-5, -1), L(15, 1)`

lecture video lecture video lecture video solution video QR code

20

Determine the equation of the line that has the same x-intercept as the line described by $x - 5y + 10 = 0$, and the same y-intercept as the line $3x + 2y - 6 = 0$.

lecture video lecture video lecture video solution video QR code

21

$m = 0$, y-intercept is 2, find the equation.

lecture video lecture video lecture video solution video QR code

22

Determine the equation of each line.

lecture video lecture video lecture video solution video QR code

23

Determine the equation of each line.

lecture video lecture video lecture video solution video QR code

24

Determine the equation of each line.

lecture video lecture video lecture video solution video QR code

25

Determine the equation of each line.

lecture video lecture video lecture video solution video QR code

26

Determine the equation of each line.

lecture video lecture video lecture video solution video QR code

27

Determine the equation of each line.

lecture video lecture video lecture video solution video QR code

28

If the equation `y = 3x + b` represents a line that passes through the given point, determine the value of the y-intercept `b`.

`(4,1)`

lecture video lecture video lecture video solution video QR code

29

If the equation `y = 3x + b` represents a line that passes through the given point, determine the value of the y-intercept `b`.

`(-3, 2)`

lecture video lecture video lecture video solution video QR code

30

If the equation $y = 3x + b$ represents a line that passes through the given point, determine the value of the y-intercept b.

$(1, -3)$

lecture video lecture video lecture video solution video QR code

31

If the equation $y = mx + 3$ represents a line that passes through the given point, determine the value of m.

$(2, 4)$

lecture video lecture video lecture video solution video QR code

32

If the equation $y = mx + 3$ represents a line that passes through the given point, determine the value of m.

$(-3, 7)$

lecture video lecture video lecture video solution video QR code

33

If the equation $y = mx + 3$ represents a line that passes through the given point, determine the value of m.

$(8, 2)$

lecture video lecture video lecture video solution video QR code

34

Determine the equation of the line described below.

has an x-intercept of 4 and a y-intercept of -3

lecture video lecture video lecture video solution video QR code

35

The LeBlanc family is driving home. The LeBlance are using cruise control so their speed is constant. After 3h, they are 350 km from home. After 5h, they are 130 km from home.

a) Write an equation to represent this distance-time relationship.

b) What do the slope and y-intercept of your equation mean in this situation?

lecture video lecture video lecture video solution video QR code

36

The local fall fair charges a flat fee for admission plus an additional cost for ride tickets. Last year, Kelsey purchased 15 tickets and spent a total of $19.50. His brother Quinn purchased 36 tickets and spent a total of $30.00 at the fair.

a) Determine an equation to represent the relationship between the total amount of money spent and the number of tickets purchased.

b) A ride pass, which gives a person entrance to the part and unlimited use of the rides, cost $21. Write the equation for the relationship between the total amount spent on a ride pass and the number of rides it can be used for.

c) Last year, Erin used 25 tickets at the fall fair. Should Erin purchase tickets again this year, or buy a ride pass? Explain.

d) Heather only likes the fun house, which requires one ticket. She went on this ride 10 times last year. How much money would Heather save by purchasing tickets instead of a ride pass?

lecture video lecture video lecture video solution video QR code

37

Lisa downloads music from the Music G site, which charges monthly membership fee plus an amount for each song downloaded. A three-month record of her activity on the site is shown.

$$\displaystyle \begin{array}{|c|c|c|} \hline \text{Month} & \text{Number of Songs Downloaded} & \text{Monthly Bill } (\$) \\ \hline \text{January} & 54 & 26.90 \\ \hline \text{February} & 38 & 25.30 \\ \hline \text{March} & 21 & 23.60 \\ \hline \end{array}$$

(a) Use two points from the table to determine the equation of the relationship between number of downloads and her monthly bill.

(b) Lisa's brother thinks she should change to Web W, which doesn't have a membership fee and charges $0.95 per song. If Lisa download more than $25/month, she should switch the plan to Web W?

lecture video lecture video lecture video solution video QR code

38

Determine the equation of the **median** from Q to the midpoint of PR, in triangle PQR, with P(4, 8), Q(3, 2), and R(6, 4).

lecture video lecture video lecture video solution video QR code

39

Given any two points on a line, the equation of the line can be determined from the point-slope form of the equation of the line:

`y=m(x - p) + q`

lecture video lecture video lecture video solution video QR code

40

Given any two points on a line, the equation of the line can be determined to form the point-slope form of the equation of the line: `y = m(x - p) + q`.

Substitute the coordinates into the slope formula `\dfrac{y-q}{x-p}=m` then isolate `y`.

lecture video lecture video lecture video solution video QR code

41

- Use the point-slope form: `y = m(x - p) + q`

of the equation of a line to determine the equations of the line that has a slope of 3 and passes through the point `(1, 2)`.

- Determine the equation of the line in part (b) using `y = mx + b` to verify that he new formula works.

lecture video lecture video lecture video solution video QR code

42

Use the point-slope form `y = m(x - p) + q`

of the quatrain of a line to determine the equation for each of the following lines.

- i) passing through points `(4, -6), (5, -1)`
- ii) passing through points `(3, -1), (9, 3)`
- iii) passing through points `(4, 5), (3, 9)`

lecture video lecture video lecture video solution video QR code

0

State an equation of a line parallel to `y=-\frac{3}{2}x + 9`.

lecture video lecture video lecture video solution video QR code

1

Write the equation of a line parallel to the x-axis that passes through the point (1, 4).

lecture video lecture video lecture video solution video QR code

2

Write the equation of a line parallel to the x-axis that passes through the point (3, -8).

lecture video lecture video lecture video solution video QR code

3

In general, what is true about the equation of any line parallel to the x-axis?

lecture video lecture video lecture video solution video QR code

4

Write the equation of a line parallel to the y-axis that passes through the point (-9, 3).

lecture video lecture video lecture video solution video QR code

5

Write the equation of a line parallel to the y-axis that passes through the point (6, 2).

lecture video lecture video lecture video solution video QR code

6

In general, what is true about the equation of any line parallel to the y-axis?

lecture video lecture video lecture video solution video QR code

7

Use the given information to write the equation of each line.

A line parallel to the line defined by $y=3x + 5$ and passing through the point $(3, -5)$

lecture video lecture video lecture video solution video QR code

8

Use the given information to write the equation of each line.

A line parallel to the line defined by $3x + 2y=7$ with y-intercept = 3

lecture video lecture video lecture video solution video QR code

9

Determine the value of `k` in each graph.

lecture video lecture video lecture video solution video QR code

10

A line segment has endpoints `A(1, -5)` and `B(4, 1)`.

- Determine the coordinate of two points, C and D, that would make ABCD a parallelogram.

lecture video lecture video lecture video solution video QR code

11

State an equation of a line perpendicular to `y=-\frac{3}{2}x + 9`.

lecture video lecture video lecture video solution video QR code

12

Use the given information to write the equation of each line.

A line perpendicular to the line defined by $y=3x + 5$ and passing through the point $(3, -5)$

lecture video lecture video lecture video solution video QR code

13

Use the given information to write the equation of each line.

A line perpendicular to the line defined by $2x - 3y+18=0$ with the same y-intercept

lecture video lecture video lecture video solution video QR code

14

Determine the equation of a line perpendicular to $4x - 3y - 2=0$ with the same y-intercept as the line defined by $3x + 4y=-12$.

lecture video lecture video lecture video solution video QR code

15

Determine the equation of a line perpendicular to $2x - 5y=6$ with the same x-intercept as the line defined by $3x + 8y-15=0$.

lecture video lecture video lecture video solution video QR code

16

Determine the value of k in each graph.

lecture video lecture video lecture video solution video QR code

17

A line segment has endpoints $A(1, -5)$ and $B(4, 1)$.

- Determine the coordinate of two points, C and D, that would make ABCD a rectangle.

lecture video lecture video lecture video solution video QR code

18

A line segment has endpoints `A(1, -5)` and `B(4, 1)`.

- Determine the coordinate of two points, C and D, that would make ABCD a square.

lecture video lecture video lecture video solution video QR code

19

Determine which of the following lines are parallel and which are perpendicular to each other.

(a) `y=-\frac{1}{3}x + 2`

(b) `y=-3x+2`

(c) `y=\frac{7}{2}x - 4`

(d) `y=\frac{2}{7}x - 3`

(e) `y=\frac{1}{3}x + 1`

(f) `y=\frac{1}{-3}x - 8`

(g) `y=\frac{-3}{9}x`

(h) `y=\frac{-2}{7}x - 9`

lecture video lecture video lecture video solution video QR code

20

For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

`y=2x+5`

`y=-\frac{1}{2}x - 4`

lecture video lecture video lecture video solution video QR code

21

For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

```
y=\frac{2}{3}x - 2
```

```
y=-1.5x - 6
```

lecture video lecture video lecture video solution video QR code

22

For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

```
y=\frac{3}{7}x - 4
```

```
y=-\frac{3}{7}x - 4
```

lecture video lecture video lecture video solution video QR code

23

For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

```
x - 4y=2
```

```
2x - 8y=3
```

lecture video lecture video lecture video solution video QR code

24

For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

$y=-0.2x - 1$

$y=-\frac{1}{5}x + 3$

lecture video lecture video lecture video solution video QR code

25

For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

$x - 5y + 8=0$

$5x - y=0$

lecture video lecture video lecture video solution video QR code

26

Are the lines defined by the equations $y=4$ and $x=3$ parallel, perpendicular, or neither? Explain.

lecture video lecture video lecture video solution video QR code

27

The following set of points define the endpoints of line segments. Determine which line segments are parallel and which line segments are perpendicular.

`A(6, 5)` and `B(12, 3)`

`P(-3, -4)` and `Q(5, 20)`

`G(0, -4)` and `H(6, -2)`

`U(-5, 9)` and `V(-6, 12)`

`K(2, 4)` and `L(6, 16)`

lecture video lecture video lecture video solution video QR code

28

For the given vertices, determine whether or not `\triangle` ABC is a right triangle.

`A(13, 3), B(3, 5),` and `C(-2, -20)`

lecture video lecture video lecture video solution video QR code

29

For the given vertices, determine whether or not `\triangle` ABC is a right triangle.

`A(5, 4), B(-1, 2),` and `C(2, -1)`

lecture video lecture video lecture video solution video QR code

30

Show algebraically that the points `A(-4, 7), B(6.5, 1), C(-8, 0)`, and `D(2.5, -6)` form a rectangle.

lecture video lecture video lecture video solution video QR code

31

`\mathrm{\overline{AM}}` is a median. Show that `\mathrm{\overline{AM}}` is perpendicular to `\mathrm{\overline{BC}}`.

lecture video lecture video lecture video solution video QR code

32

ABCD is a rhombus. Show that the diagonals of the rhombus are perpendicular to each other.

lecture video lecture video lecture video solution video QR code

0

Identify the slope and y-intercept for each line.

```
\displaystyle \begin{array}{lllll} &a) & y= 3x +4 &c) & y = -1.11 + 9.7x \\ &b)& y = -
\frac{2}{5}x - 6.8 &d)& y =3 \\ \end{array}
```

lecture video lecture video lecture video solution video QR code

1

Order the set of lines from closest to horizontal to closest to vertical.

```
\displaystyle \begin{array}{lllll} & y = 2x -4 \\ & y = x + 8\\ & y = \frac{1}{3}x - 2
\end{array}
```

lecture video lecture video lecture video solution video QR code

2

Order the set of lines from closest to horizontal to closest to vertical.

```
\displaystyle \begin{array}{lllll} & y = -\frac{1}{3}x + 5\\ & y = -8x - 2\\ & y = -
\frac{5}{2}x + 3 \end{array}
```

lecture video lecture video lecture video solution video QR code

3

Copy and complete the table to identify whether the lines will rise or fall to the right.

```
\displaystyle \begin{array}{|l|l|l|} \hline Equation & Rises to the Right & Falls to the
Right \\ \hline y=4 x+5 & & \\ \hline y=-\frac{2}{3} x-8 & & \\ \hline y=-2.8 x+4 & & \\
\hline y=\frac{21}{8} x & & \\ \hline y=1.5 x+4.5 & & \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

4

Determine the slope and y-intercept.

```
\displaystyle 3x - 4y + 9 = 0
```

lecture video lecture video lecture video solution video QR code

5

Determine the slope and y-intercept.

```
\displaystyle 5x - y = 12
```

lecture video lecture video lecture video solution video QR code

6

Determine the slope and y-intercept.

$$\displaystyle 2x + 6y = 32$$

lecture video lecture video lecture video solution video QR code

7

Determine the slope and y-intercept.

$$\displaystyle 8x + 2y - 4 = 0$$

lecture video lecture video lecture video solution video QR code

8

Evan and Sara shovel driveway in the winter time to earn some money. They charge $10 for a double driveway and $5 for a single driveway. This past winter, Min earned $255 and Steve earned $230.

a. Write equations for both Evan and Sarah to represent the relationship between the amounts earned shovelling single and double driveways.

b. Isolate the variable used for single driveways in both equations.

c. If they both shovelled 10 double driveways, how many single driveways did each shovel?

lecture video lecture video lecture video solution video QR code

9

Calculate the slopes of the line segments shown below.

lecture video lecture video lecture video solution video QR code

10

Determine the equation of each line.

lecture video lecture video lecture video solution video QR code

11

Calculate the slopes of the lines that pass through each of the following pairs of points.

A(8, 2) and B(1, 9)

lecture video lecture video lecture video solution video QR code

12

Calculate the slopes of the lines that pass through each of the following pairs of points.

E(-1, 5) and F(3, 2)

lecture video lecture video lecture video solution video QR code

13

Calculate the slopes of the lines that pass through each of the following pairs of points.

C(-1, 2) and D(3, -8)

lecture video lecture video lecture video solution video QR code

14

Calculate the slopes of the lines that pass through each of the following pairs of points.

G(-3, 2) and H(-9, -11)

lecture video lecture video lecture video solution video QR code

15

The points $(-6, -3)$, $(k, 1)$, and $(8, 4)$ are collinear. Determine the value of k.

lecture video lecture video lecture video solution video QR code

16

Three hours after beginning her long-distance bicycle trip, Cathy was 98 km from home. After seven hours, she was 182 km from home. Assuming she maintained the same speed throughout the trip, how fast was she cycling?

lecture video lecture video lecture video solution video QR code

Chapter 6 Data Relationships

0

The scatter plot shows the sales of bottled water at a refreshment booth at the Canadian National Exhibition in Toronto for different days during a heat wave one summer.

a. What information does point A represent? What does point B represent?

b. What does the scatter plot show about the relationship between water sales and temperature?

lecture video lecture video lecture video solution video QR code

1

The scatter plot shows the ages of some tractors and their values.

a. Identify the independent variable and the dependent variable.

b. Would you consider the variables to be discrete or continuous? Would you use a dashed line or a solid line to join the points?

c. Does the scatter plot suggest a relationship between the age of a tractor and its value? Explain.

lecture video lecture video lecture video solution video QR code

2

These data show the heights of some Grade 9 boys and their fathers.

```
\displaystyle \begin{array}{|l|l|l|l|l|l|l|l|l|l|l|l|l|l|} \hline \text{Height of Grade 9
Boy (cm)} & 164 & 168 & 150 & 162 & 159 & 165 & 187 & 152 & 180 \\& 166 & 148 & 159 \\
\hline \text{Height of Father (cm)} & 171 & 186 & 164 & 180 & 176 & 177 & 192 & 167 & 189
\\& 180 & 165 & 172 \\ \hline \end{array}
```

a. Identify the independent variable and the dependent variable.

b. Would you consider the variables to be discrete or continuous?

c. Would you use a dashed line or a solid line to join the points?

d. Construct a scatter plot for the data.

e. Does the scatter plot suggest a relationship between a boy’s height and his father’s height? Explain.

f. Is there is a relationship between the variables? Suggest reasons for this.

lecture video lecture video lecture video solution video QR code

3

Countries and Films Represented at the Toronto International Film Festival

$$\displaystyle \begin{array}{|l|r|r|r|r|r|r|r|} \hline \text{Year} & 2006 & 2005 & 2004 & 2003 & 2002 & 2001 & 2000 \\ \hline \text{Countries} & 61 & 52 & 55 & 50 & 50 & 54 & 56 \\ \hline \text{Films} & 352 & 335 & 336 & 339 & 345 & 326 & 329 \\ \hline \end{array}$$

a. Draw a scatter plot using the number of countries and the number of films.

b. Explain how you chose the independent and dependent variables.

c. Describe any patterns you see in the scatter plot.

lecture video lecture video lecture video solution video QR code

4

$$\displaystyle \begin{array}{|l|l|l|l|l|l|l|l|l|l|l|l|l|l|l|l|l|l|l|l|} \hline \text{Speed} (\mathrm{km} / \mathrm{h}) & 3 & 8 & 11 & 16 & 21 & 26 & 32 & 40 & 50 & 60 & 64 & 67 & 71 & 80 & 90 & 100 & 110 \\ \hline \text{Fuel Consumption} (\mathbf{L} / \mathbf{1 0 0} \mathrm{km}) & 14.9 & 5.3 & 4.7 & 3.8 & 3.5 & 3.3 & 3.2 & 3.1 & 3.1 & 3.1 & 3.1 & 3.8 & 3.9 & 4.1 & 4.4 & 4.9 & 5.3 \\ \hline \end{array}$$

a. Draw a scatter plot of the data.

b. Describe any pattern you see.

c. Does the pattern you described in part b) seem reasonable? Explain.

d. Does the pattern you described in part b) suggest how you should drive in order to minimize fuel consumption?

e. Who would want this information? Why?

f. Are the variables discrete or continuous?

g. Which variable did you choose for the independent variable? Explain.

lecture video lecture video lecture video solution video QR code

5

This table shows the birth rates in four provinces over the last few years.

Number of Births per 1000 People

$$\displaystyle \begin{array}{|c|c|c|c|c|} \hline \text{Year} & \text{Alberta} & \text{British Columbia} & \text{Newfoundland and Labrador} & \text{Ontario} \\ \hline 2001 & 12.4 & 9.8 & 8.8 & 10.9 \\ \hline 2002 & 12.8 & 9.9 & 8.8 & 10.8 \\ \hline 2003 & 12.9 & 9.7 & 8.9 & 10.9 \\ \hline 2004 & 12.9 & 9.7 & 8.6 & 10.8 \\ \hline 2005 & 12.7 & 9.6 & 8.6 & 10.6 \\ \hline \end{array}$$

a. Draw a scatter plot of the number of births for this five—year period for each province on a single grid.

b. Do any provincial data show a strong pattern?

lecture video lecture video lecture video solution video QR code

6

The data below show the number of car accidents in a year for different age groups.

$$\displaystyle \begin{array}{|c|c|} \hline \text{Age Group} & \text{Number of Accidents} \\ \hline 16-19 & 6382 \\ \hline 20-24 & 7183 \\ \hline 25-34 & 11733 \\ \hline 35-44 & 8990 \\ \hline 45-54 & 5517 \\ \hline 55-64 & 3307 \\ \hline 65-74 & 2308 \\ \hline \end{array}$$

a. Choose an independent variable and a dependent variable. Explain how you chose.

b. Draw a scatter plot of the data. Use the median age for each age group.

c. Describe any trends you see in the scatter plot.

d. s it appropriate to connect the plotted points with a line? If so, should the line be solid or broken? Explain.

e. Veera says that young people have more car accidents than old people. Are there sufficient data to support this claim? If not, what further information would be helpful? Explain.

lecture video lecture video lecture video solution video QR code

0

This scatter plot shows the monthly profit for a car dealership when a certain number of cars are sold.

a. Use the graph to estimate the monthly profit in a month where 23 cars are sold.

b. Use the graph to estimate the number of cars sold in a month where the profit is $67000.

lecture video lecture video lecture video solution video QR code

1

In this table, x represents the number of people enrolled in various classes at a health club, and y represents the number in each class that are male.

$$\displaystyle \begin{array}{|r|r|r|r|r|r|r|r|r|} \hline \boldsymbol{x} & 19 & 10 & 6 & 16 & 15 & 9 & 12 & 21 \\ \hline \boldsymbol{y} & 10 & 4 & 2 & 5 & 7 & 3 & 8 & 8 \\ \hline \end{array}$$

a. Construct a scatter plot for the data.

b. Sketch a line of best fit.

c. Use the line of best fit to estimate the value of y when $x = 14$.

d. Use the line of best fit to estimate the value of y when $x = 27$.

lecture video lecture video lecture video solution video QR code

2

A chair company has a contract to build all 1790 seats in a concert hall. The progress over the first week of work is shown in the table.

3

```
\displaystyle \begin{array}{|l|r|r|r|r|r|r|r|} \hline Number of Days & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ \hline \text{Total Number of Seats Completed} & 97 & 204 & 327 & 443 & 539 & 661 & 795 \\ \hline \end{array}
```

Kim is on her school basketball team. This table shows her statistics for n the first 10 games of the season. (Each field goal made counts for two points. and each free throw made counts for one point.)

a. Estimate the number of seats built after 9 days. How many are built by the middle of day 5?

b. Estimate the number of days needed to build 1252 seats.

- Use a line of best fit to estimate the number of field goals Kim would make if nine were attempted.

c. The company gets a bonus if it is able to finish all of the seats in two weeks or less. If the workers continue to make chairs at about the same rate in the second week, will the company be able to collect the bonus?

lecture video lecture video lecture video solution video QR code

4

lecture video lecture video lecture video solution video QR code

Kim is on her school basketball team. This table shows her statistics for n the first 10 games of the season. (Each field goal made counts for two points. and each free throw made counts for one point.)

- Use a line of best fit to estimate the number of points Kim would score if she played for 40 min.

lecture video lecture video lecture video solution video QR code

0

Match each story to a graph on the next page that best describes the story.

a. Michael walks to school at a steady pace. He waits once for a stop light and continues to school at a faster pace. After being at school, he returns home without stopping or slowing down.

b. A log floating in a slow, steadily moving river goes through two sets of rapids before going over a waterfall into a lake.

c. A taxi driver charges a passenger to get in the cab plus a fixed amount for every 100 m.

d. A skydiver enters a plane that takes OH and climbs at a steady rate. He jumps out and free-falls until the parachute opens. He descends the rest of the way at a constant speed.

lecture video lecture video lecture video solution video QR code

1

This graph shows how an all terrain vehicle (ATV) travels over time.

a) Over what interval of time is the ATV travelling the slowest? the fastest?

b) When does the ATV start to return to its starting point? When does it get there?

c) Determine the slope of the graph between 20 s and 26 s.

d) What does a zero slope mean in the context of this graph?

3

lecture video lecture video lecture video solution video QR code

Write a story for the graph.

Describe a situation that could match this graph.

lecture video lecture video lecture video solution video QR code
lecture video lecture video lecture video solution video QR code

4

Write a story for the graph.

lecture video lecture video lecture video solution video QR code

5

Water is poured into this container at a constant rate. Draw a graph that represents this situation where d is depth and t is time.

lecture video lecture video lecture video solution video QR code

6

A race car travels around a race track. The graph of speed vs. time for the first lap by the car is shown. a) What do the increasing parts of the graph represent? the decreasing parts?

b) What do the horizontal parts of the graph represent?

c) Using the graph, tell a story about the car as it makes its first lap around the track.

lecture video lecture video lecture video solution video QR code

7

Draw a graph of speed versus time as a car makes one circuit of each track. The arrow shows the direction the car is moving.

lecture video lecture video lecture video solution video QR code

8

Draw a graph of speed versus time as a car makes one circuit of each track. The arrow shows the direction the car is moving.

lecture video lecture video lecture video solution video QR code

9

Draw a graph of speed versus time as a car makes one circuit of each track. The arrow shows the direction the car is moving.

lecture video lecture video lecture video solution video QR code

10

Draw a graph of speed versus time as a car makes one circuit of each track. The arrow shows the direction the car is moving.

lecture video lecture video lecture video solution video QR code

11

Plot each set of data, and then, determine if it represents a linear or nonlinear relationship. Justify your decision. 2. In each set of data, determine if the object is accelerating, decelerating, moving at a constant velocity, or a combination of all three.

```
\displaystyle \begin{array}{|r|c|} \hline Time (s) & Distance (m) \\ \hline 7 & 19 \\
\hline 8 & 22 \\ \hline 9 & 25 \\ \hline 10 & 28 \\ \hline 11 & 31 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

12

1. Plot each set of data, and then, determine if it represents a linear or nonlinear relationship. Justify your decision.
2. In each set of data, determine if the object is accelerating, decelerating, moving at a constant velocity, or a combination of all three.

```
\displaystyle \begin{array}{|c|c|} \hline Time (s) & Distance (m) \\ \hline 0 & 0 \\
\hline 1 & 7 \\ \hline 2 & 16 \\ \hline 3 & 29 \\ \hline \end{array}
```

lecture video lecture video lecture video solution video QR code

0

The scatter plot below shows the graphics quality (on a scale of1 to 10) foraVideo game when it is played on various computers.

a. Is the line of best fit appropriate? If so, explain why. If not, sketch a more appropriate one.

b. Determine the equation of the most appropriate line of best fit.

lecture video lecture video lecture video solution video QR code

1

The scatter plot shows the population of a colony of wolves in a wilderness region of Northern Ontario.

a. Explain whether the line of best fit is appropriate.

b. Would a curve of best fit be more appropriate? If so, sketch one. If not, explain why not.

c. Might both a line of best fit and a curve of best fit be appropriate? Explain.

lecture video lecture video lecture video solution video QR code

2

Do you think that the number of chess grandmasters in a country is related to the size of its population?

a. Formulate a conjecture about the relationship.

b. Consider the data for a sample of countries. Plot the data on a scatter plot.

```
\displaystyle \begin{array}{|l|r|r|r|r|c|} \hline Shoe Size & 8.5 & 9.0 & 9.0 & 10.0 &
10.5 \\ \hline Height (cm) & 166 & 174 & 169 & 178 & 175 \\ \hline \end{array}
```

```
\displaystyle \begin{array}{|l|c|c|c|c|c|} \hline Shoe Size & 10.5 & 11.0 & 11.5 & 12.0 &
12.5 \\ \hline Height (cm) & 183 & 187 & 182 & 190 & 184 \\ \hline \end{array}
```

c. If possible, sketch a line or curve of best fit.

d. Is there a relationship between the variables? If so, describe it.

e. Suggest other influences on the number of grandmasters in a country.

A hotel courtesy bus takes David from the airport to his hotel. Use the Distance versus Time graph to create a story that traces the route of the bus.

lecture video lecture video lecture video solution video QR code

lecture video lecture video lecture video solution video QR code

0

The scatter plot at the bottom shows the amount of food eaten in a day by dogs of various masses. If the line of best fit is appropriate, explain why. If it is not appropriate, explain how you would draw an appropriate line.

lecture video lecture video lecture video solution video QR code

1

Grant leads a team of high school students who speak to elementary school students about the health problems that result from smoking cigarettes. Each high school student is responsible for one elementary school. Data on the number of hours spent by each high school student (in a year) and the corresponding number of smokers in each elementary school are summarized in the table.

```
\displaystyle \begin{array}{|l|l|l|l|l|l|l|l|l|l|} \hline Speaking Time (h) & 24 & 31 & 40 & 41 & 50 & 29 & 38 & 62 & 47 \\ \hline Number of Smokers & 36 & 27 & 16 & 10 & 3 & 23 & 20 & 1 & 19 \\ \hline \end{array}
```

a. Plot the data on a scatter plot.

b. Describe the pattern in the data.

c. Sketch a line or curve of best fit, whichever is more appropriate.

d. Can you conclude that the program of speaking to elementary school students has been effective in reducing smoking? Explain.

lecture video lecture video lecture video solution video QR code

2

Shasta runs one kilometre each day as part of her daily exercise. The graph shows her 500 distance from home as she runs her route.

a. Between what two points does Shasta run the fastest?

b. Describe what is happening between points C and D.

c. When does Shasta begin to travel toward home?

d. How long does it take her to get home?

e. How fast was she running back home?

0

lecture video lecture video lecture video solution video QR code

1

Use the line of best fit to predict the amount of rainfall for the ninth month of the year.

A. 50 mm

B. 40 mm

C. 30 mm

D. 20 mm

lecture video lecture video lecture video solution video QR code

Chapter 7 2-D Geometry

0

Find the angles for the missing values.

lecture video lecture video lecture video solution video QR code

1

Find the angles for the missing values.

lecture video lecture video lecture video solution video QR code

2

Find the missing value.

lecture video lecture video lecture video solution video QR code

3

Determine the value of the missing angles.

lecture video lecture video lecture video solution video QR code

4

Determine the value of the missing angles.

lecture video lecture video lecture video solution video QR code

5

Find the missing value.

lecture video lecture video lecture video solution video QR code

6

Find the missing value.

lecture video lecture video lecture video solution video QR code

7

Find the missing value.

lecture video lecture video lecture video solution video QR code

0

Copy the following polygons. Draw as many non-intersecting diagonals as possible to create non—overlapping triangles. What is the sum of the interior angles in each case?

lecture video lecture video lecture video solution video QR code

1

Copy the following polygons. Draw as many non-intersecting diagonals as possible to create non—overlapping triangles. What is the sum of the interior angles in each case?

lecture video lecture video lecture video solution video QR code

2

Copy the following polygons. Draw as many non-intersecting diagonals as possible to create non—overlapping triangles. What is the sum of the interior angles in each case?

lecture video lecture video lecture video solution video QR code

3

Copy the following polygons. Draw as many non-intersecting diagonals as possible to create non—overlapping triangles. What is the sum of the interior angles in each case?

lecture video lecture video lecture video solution video QR code

4

Calculate the sum of the interior angles of each polygon.

lecture video lecture video lecture video solution video QR code

5

Calculate the sum of the interior angles of each polygon.

lecture video lecture video lecture video solution video QR code

6

Calculate the sum of the interior angles of each polygon.

lecture video lecture video lecture video solution video QR code

7

Calculate the sum of the interior angles of each polygon.

lecture video lecture video lecture video solution video QR code

8

Polygon A is a regular 10-gon and polygon B is an irregular 10-gon. Are the sums of their interior angles equal? Explain.

lecture video lecture video lecture video solution video QR code

9

What is the measure of each interior angle of a regular 14-gon?

lecture video lecture video lecture video solution video QR code

10

The sum of the interior angles in a polygon is 1440°. How many sides does the polygon have?

lecture video lecture video lecture video solution video QR code

0

What is the relationship between the interior angle and the exterior angle at each vertex of a polygon?

lecture video lecture video lecture video solution video QR code

1

Determine the measure of each missing angle.

lecture video lecture video lecture video solution video QR code

2

Determine the measure of each missing angle.

lecture video lecture video lecture video solution video QR code

3

Determine the measure of each missing angle.

lecture video lecture video lecture video solution video QR code

4

Determine the measure of each missing angle.

lecture video lecture video lecture video solution video QR code

5

In this diagram, `\angle E` in `\triangle BEC` is a right angle. What is the sum of angles `a` and `d`?

lecture video lecture video lecture video solution video QR code

6

What is the measure of `\angle CAB` in this diagram?

lecture video lecture video lecture video solution video QR code

7

Determine the measure of each missing angle.

lecture video lecture video lecture video solution video QR code

8

Determine the measure of each missing angle.

lecture video lecture video lecture video solution video QR code

9

For each diagram, state the equation that expresses the relationship needed to solve the problem. Then, determine the measure of each variable. Show the steps in the solution.

lecture video lecture video lecture video solution video QR code

10

For each diagram, state the equation that expresses the relationship needed to solve the problem. Then, determine the measure of each variable. Show the steps in the solution.

lecture video lecture video lecture video solution video QR code

11

For any regular n-gon, developed a formula for calculating the measure of each interior angle. Explain your steps.

lecture video lecture video lecture video solution video QR code

12

Determine the measure of each missing angle.

lecture video lecture video lecture video solution video QR code

13

Determine the measure of each missing angle.

lecture video lecture video lecture video solution video QR code

14

An interior angle of a parallelogram is the measure of the exterior angle adjacent to it multiplied by 4. Determine the measure of each interior angle. Draw the parallelogram.

lecture video lecture video lecture video solution video QR code

15

In `\triangle` ABC, the measure of`\angle B` is `21^{o}` less than the angle of `\angle A` multiplied by 4. The measure of `\angle C` is `1^{o}` more than the measure of `\angle A` multiplied by 5. Determine the measure of each interior angle and each exterior angle of `\triangle ABC`.

lecture video lecture video lecture video solution video QR code

16

In the diagram, AB is parallel to FG and BC is parallel to DE.

- What is the relationship between `\angle 1` and `\angle 2`?

lecture video lecture video lecture video solution video QR code

17

Determine the measure of each missing angle in this parallel line setup.

lecture video lecture video lecture video solution video QR code

18

Determine the measure of each missing angle.

lecture video lecture video lecture video solution video QR code

19

For each diagram, state the equation that expresses the relationship needed to solve the problem. Then, determine the measure of each variable. Show the steps in the solution.

lecture video lecture video lecture video solution video QR code

20

For each diagram, state the equation that expresses the relationship needed to solve the problem. Then, determine the measure of each variable. Show the steps in the solution.

lecture video lecture video lecture video solution video QR code

21

In a regular polygon, the ratio of the measure of the exterior angle to the measure of its adjacent interior angle is 1 to 4. How many sides does the polygon have?

lecture video lecture video lecture video solution video QR code

0

Each quadrilateral ABCD below has these three vertices: A(0, 0), B(3, 4), and C(8, 4). Use diagonal properties to identify the coordinates of the fourth vertex D in each case. Explain your method.

- rhombus

lecture video lecture video lecture video solution video QR code

1

Each quadrilateral ABCD below has these three vertices: A(0, 0), B(3, 4), and C(8, 4). Use diagonal properties to identify the coordinates of the fourth vertex D in each case. Explain your method.

- isosceles trapezoid

lecture video lecture video lecture video solution video QR code

2

Each quadrilateral ABCD below has these three vertices: A(0, 0), B(3, 4), and C(8, 4). Use diagonal properties to identify the coordinates of the fourth vertex D in each case. Explain your method.

- kite

lecture video lecture video lecture video solution video QR code

3

Match each pair of diagonals with its quadrilateral. Explain your reasoning.

lecture video lecture video lecture video solution video QR code

0

Determine the measure of the missing interior angle.

lecture video lecture video lecture video solution video QR code

1

Determine the measure of the missing interior angle.

lecture video lecture video lecture video solution video QR code

2

Determine the measure of the missing interior angle.

lecture video lecture video lecture video solution video QR code

3

Determine the measure of the missing interior angle.

lecture video lecture video lecture video solution video QR code

4

Determine the measure of the missing interior angle.

lecture video lecture video lecture video solution video QR code

5

Determine the measure of the missing interior angle.

lecture video lecture video lecture video solution video QR code

6

Determine the measure of the missing angle. Support your answer with mathematical reasoning.

lecture video lecture video lecture video solution video QR code

7

Determine the measure of the missing angle. Support your answer with mathematical reasoning.

lecture video lecture video lecture video solution video QR code

8

Determine the measure of the missing angle. Support your answer with mathematical reasoning.

lecture video lecture video lecture video solution video QR code

9

Determine the measure of the missing angle. Support your answer with mathematical reasoning.

lecture video lecture video lecture video solution video QR code

10

Complete the table for each regular polygon.

lecture video lecture video lecture video solution video QR code

0

Predict whether a polygon's sides are all equal if its interior angles are all equal. Support your conjecture with examples or disprove it with a counterexample.

lecture video lecture video lecture video solution video QR code

1

Predict whether a polygon's interior angles are all equal if its sides are all equal. Support your conjecture with examples or disprove it with a counterexample.

lecture video lecture video lecture video solution video QR code

2

Create a conjecture to predict the number of diagonals from any one vertex of a convex polygon with n sides. Support your conjecture with examples or disprove it with a counterexample.

lecture video lecture video lecture video solution video QR code

3

Test this conjecture: “If the midsegments of a quadrilateral form a square, then the quadrilateral is itself a square.”

lecture video lecture video lecture video solution video QR code

4

Test this conjecture: “The medians of a triangle always intersect at exactly one point.”

lecture video lecture video lecture video solution video QR code

5

Test this conjecture: “It is always possible to draw a circle through all four vertices in a rectangle.”

lecture video lecture video lecture video solution video QR code

0

Remi is building a triangular wooden shelving unit. The base measures 30 cm and the slant sides measure 18 cm and 24 cm. He wants a horizontal shelf halfway between the base and the top. What length of wood should he cut for the shelf?

lecture video lecture video lecture video solution video QR code

1

A trapezoid has parallel sides of length 51 cm and 144 cm. Its other sides measure 34 cm and 65 cm.

(a) Determine the length of the bimedian joining the two non-parallel sides.

lecture video lecture video lecture video solution video QR code

2

A trapezoid has parallel sides of length 51 cm and 144 cm. Its other sides measure 34 cm and 65 cm.

(b) The distance between the parallel sides is 8 cm. How far is the bimedian from each?

lecture video lecture video lecture video solution video QR code

0

Calculate the missing angle.

lecture video lecture video lecture video solution video QR code

1

Calculate the missing angle.

lecture video lecture video lecture video solution video QR code

2

Calculate the value of x.

lecture video lecture video lecture video solution video QR code

3

Billy claims that the sum of the interior angles of a regular octagon is 900°. Is he correct? Justify your decision.

lecture video lecture video lecture video solution video QR code

4

a) Calculate the measure of each interior angle of a regular 25- gon.

b) What is the measure of each exterior angle?

lecture video lecture video lecture video solution video QR code

5

Find the value of the unknown.

lecture video lecture video lecture video solution video QR code

6

Find the value of the unknown.

lecture video lecture video lecture video solution video QR code

7

The formula for calculating the sum of the interior angles of any n-gon is `(n-2)\times 180^o`

- Explain why 2 is subtracted from n.

lecture video lecture video lecture video solution video QR code

8

The formula for calculating the sum of the interior angles of any n-gon is `(n-2)\times 180^o`

- Explain why `(n - 2)` is multiplied by `180^o`.

lecture video lecture video lecture video solution video QR code

9

Find the value of the unknown.

lecture video lecture video lecture video solution video QR code

10

Find the value of the unknown.

lecture video lecture video lecture video solution video QR code

11

Calculate the value of x.

lecture video lecture video lecture video solution video QR code

12

Describe the possible type(s) of quadrilateral that could be made with each set of diagonals. Justify your answers.

lecture video lecture video lecture video solution video QR code

13

Describe the possible type(s) of quadrilateral that could be made with each set of diagonals. Justify your answers.

lecture video lecture video lecture video solution video QR code

14

Describe the possible type(s) of quadrilateral that could be made with each set of diagonals. Justify your answers.

lecture video lecture video lecture video solution video QR code

15

Describe the possible type(s) of quadrilateral that could be made with each set of diagonals. Justify your answers.

lecture video lecture video lecture video solution video QR code

16

A trapezoid has parallel sides 6 cm and 46 cm. The other sides measure 37 cm and 13 cm.

a) Determine the length of the bimedian joining the two non—parallel sides.

b) The distance between the parallel sides is 12 cm. How far is the bimedian from each?

lecture video lecture video lecture video solution video QR code

17

Draw a circle and plot four points on it. Join adjacent points to form a quadrilateral. Extend a side at each vertex.

a) Compare each interior angle with the exterior angle at the opposite vertex. What do you notice?

b) Repeat your angle measurements for a quadrilateral whose vertices cannot all be plotted on one circle.

c) Form a conjecture from your observations, and explain how to test it.

lecture video lecture video lecture video solution video QR code

0

Determine the missing angles.

lecture video lecture video lecture video solution video QR code

1

Determine the missing angles.

lecture video lecture video lecture video solution video QR code

Chapter 8 3D Geometry

0

Each rectangle has a perimeter of 64 units. Which one has the greatest area?

lecture video lecture video lecture video solution video QR code

1

Determine the maximum area of a rectangle with each perimeter, to one decimal place.

- P = 100 cm

lecture video lecture video lecture video solution video QR code

2

Determine the maximum area of a rectangle with each perimeter, to one decimal place.

- P = 72 m

lecture video lecture video lecture video solution video QR code

3

Determine the maximum area of a rectangle with each perimeter, to one decimal place.

- P=169 km

lecture video lecture video lecture video solution video QR code

4

Determine the maximum area of a rectangle with each perimeter, to one decimal place.

- P= 143 mm

lecture video lecture video lecture video solution video QR code

5

Sarah is fencing a vegetable garden to keep rabbits out. The hardware store sells fencing for `\$25.50/m`. Her family has `\$165` to spend. What dimensions should Sarah use to build a garden with the greatest area?

lecture video lecture video lecture video solution video QR code

6

The same piece of string was used to create these three rectangles. Which one has the maximum area? Explain your thinking.

lecture video lecture video lecture video solution video QR code

7

A rectangular, indoor fish pond is being added to the lobby of a hotel. The budget allows for a stone border of 36 m around the pond. What dimensions will create a pond with the greatest area? How do you know?

lecture video lecture video lecture video solution video QR code

8

Determine the dimensions of a rectangle with a perimeter of 40 cm and the greatest possible area.

lecture video lecture video lecture video solution video QR code

9

Randy is building a rectangular, fenced dog run beside his barn. He has 120 m of fencing and plans to use the side of the barn as one side of the fenced area. What are the dimensions of a dog run that maximize the area Randy can enclose?

lecture video lecture video lecture video solution video QR code

10

A farmer has `\$3600` to spend on fencing for three adjoining rectangular pastures, as shown. The pastures all have the same dimensions. A local contracting company charges `\$6.25/m` for fencing. What is the largest area that the farmer can enclose?

lecture video lecture video lecture video solution video QR code

11

Draw rectangle with areas of 36 square units on grid paper. Which one has the least perimeter?

lecture video lecture video lecture video solution video QR code

12

Determine the minimum length of wood needed to build a rectangular frame for an art sketch of each area, to one decimal place.

- A = 1 m^2

lecture video lecture video lecture video solution video QR code

13

Determine the minimum length of wood needed to build a rectangular frame for an art sketch of each area, to one decimal place.

- A = 70 cm^2

lecture video lecture video lecture video solution video QR code

14

Determine the minimum length of wood needed to build a rectangular frame for an art sketch of each area, to one decimal place.

- A = 15.4 cm^2

lecture video lecture video lecture video solution video QR code

15

Determine the minimum length of wood needed to build a rectangular frame for an art sketch of each area, to one decimal place.

- A = 28 cm^2

lecture video lecture video lecture video solution video QR code

16

An outdoor rectangular skating rink with an area of 126 m^2 will be built with one of its side lengths next to the community centre. To enclose the rink, 3 sides of fencing are needed.

```
\displaystyle \begin{array}{|c|c|c|c|c|c|c|c|c|c|c|} \hline Width (\mathrm{m}) & 1 & 2 &
3 & 4 & 6 & 9 & 12 & 14 & 21 & 42 \\ \hline Length (\mathrm{m}) & & & & & & & & & \\
\hline Perimeter (\mathrm{m}) & & & & & & & & & \\ \hline \end{array}
```

- An outdoor rectangular skating rink with an area of 126 m^2 will be built with one of its side lengths next to the community centre. To enclose the rink, 3 sides of fencing are needed.

lecture video lecture video lecture video solution video QR code

17

What is the largest rectangular area that can be built with a 20 m fence in the corner of a building?

Create a table of values showing possible perimeters, widths, lengths, and areas.

lecture video lecture video lecture video solution video QR code

0

Calculate the shaded area of each figure.

lecture video lecture video lecture video solution video QR code

1

Calculate the shaded area of each figure.

lecture video lecture video lecture video solution video QR code

2

Calculate the perimeter and area of each shape.

lecture video lecture video lecture video solution video QR code

3

Calculate the perimeter and area of each shape.

lecture video lecture video lecture video solution video QR code

4

Calculate the shaded area of each figure.

lecture video lecture video lecture video solution video QR code

5

Calculate the shaded area of each figure.

lecture video lecture video lecture video solution video QR code

6

Calculate the shaded area of each figure.

lecture video lecture video lecture video solution video QR code

7

Calculate the area and perimeter of this shape.

lecture video lecture video lecture video solution video QR code

8

(a) Divide it into simpler polygons.

(b) Calculate the area of the shape. Explain your thinking.

lecture video lecture video lecture video solution video QR code

9

Calculate the shaded area of each figure.

lecture video lecture video lecture video solution video QR code

10

Calculate the shaded area of each figure.

lecture video lecture video lecture video solution video QR code

11

Determine an expression for the shaded area of each figure.

lecture video lecture video lecture video solution video QR code

12

Determine an expression for the shaded area of each figure.

lecture video lecture video lecture video solution video QR code

13

Calculate the area and perimeter of each regular polygon.

lecture video lecture video lecture video solution video QR code

14

Calculate the area and perimeter of each regular polygon.

lecture video lecture video lecture video solution video QR code

15

Calculate the area and perimeter of each regular polygon.

lecture video lecture video lecture video solution video QR code

16

Calculate the length of one side of each regular polygon.

lecture video lecture video lecture video solution video QR code

17

Calculate the length of one side of each regular polygon.

lecture video lecture video lecture video solution video QR code

18

(a) Explain how you can calculate the area of this shape. Include what measurements you would need to know to calculate the area.

(b) Calculate the perimeter.

lecture video lecture video lecture video solution video QR code

19

Calculate the area and perimeter of this shape. Explain what you did.

lecture video lecture video lecture video solution video QR code

20

Determine an expression for the shaded area of each figure.

lecture video lecture video lecture video solution video QR code

0

Determine the missing length.

lecture video lecture video lecture video solution video QR code

1

Determine the missing length.

lecture video lecture video lecture video solution video QR code

2

Determine the missing length.

lecture video lecture video lecture video solution video QR code

3

Determine the missing length.

lecture video lecture video lecture video solution video QR code

4

What is the length of the direct flight path from Desaulniers to Callander?

lecture video lecture video lecture video solution video QR code

5

Calculate the missing length.

lecture video lecture video lecture video solution video QR code

6

Calculate the missing length.

lecture video lecture video lecture video solution video QR code

7

Calculate the missing length.

lecture video lecture video lecture video solution video QR code

8

A path is being constructed between the corners of the school playground, as shown. Determine the length of the path.

lecture video lecture video lecture video solution video QR code

9

Determine the length of the hypotenuse.

lecture video lecture video lecture video solution video QR code

10

Determine the length of the hypotenuse.

lecture video lecture video lecture video solution video QR code

11

Determine the length of the hypotenuse.

lecture video lecture video lecture video solution video QR code

12

Determine the area of each square.

lecture video lecture video lecture video solution video QR code

13

Determine the lengths of the boom and the forestay to one decimal place.

lecture video lecture video lecture video solution video QR code

14

The outside play area of a daycare centre is shown. Show how you can use the Pythagorean theorem to ensure that the fence corners are at right angles.

lecture video lecture video lecture video solution video QR code

15

A Pythagorean triple is a group of three whole numbers that can represent the lengths of the sides of a right triangle. The smallest Pythagorean triple is 3, 4, 5. Which of the following are Pythagorean triples?

- 7, 24, 25

lecture video lecture video lecture video solution video QR code

16

A Pythagorean triple is a group of three whole numbers that can represent the lengths of the sides of a right triangle. The smallest Pythagorean triple is 3, 4, 5. Which of the following are Pythagorean triples?

- 3, 6, 8

lecture video lecture video lecture video solution video QR code

17

A Pythagorean triple is a group of three whole numbers that can represent the lengths of the sides of a right triangle. The smallest Pythagorean triple is 3, 4, 5. Which of the following are Pythagorean triples?

- 9, 21, 23

lecture video lecture video lecture video solution video QR code

18

A Pythagorean triple is a group of three whole numbers that can represent the lengths of the sides of a right triangle. The smallest Pythagorean triple is 3, 4, 5. Which of the following are Pythagorean triples?

- 31, 35, 38

lecture video lecture video lecture video solution video QR code

19

A box is 12 cm long, 5 cm wide, and 12 cm high. A cardboard rectangle is inserted along the diagonal to divide the box vertically into two equal spaces. Determine the dimensions of the cardboard rectangle.

lecture video lecture video lecture video solution video QR code

20

A square-based pyramid has a slant height of 100 m. Determine two possible sets of dimensions for the height and side length of the pyramid.

lecture video lecture video lecture video solution video QR code

0

Calculate the surface area of each type of candle.

lecture video lecture video lecture video solution video QR code

1

Calculate the surface area of each type of candle.

lecture video lecture video lecture video solution video QR code

2

Calculate the surface area of each shape.

lecture video lecture video lecture video solution video QR code

3

Calculate the surface area.

lecture video lecture video lecture video solution video QR code

4

Calculate the surface area.

lecture video lecture video lecture video solution video QR code

5

Calculate the surface area.

lecture video lecture video lecture video solution video QR code

6

There are two shapes of snow—cone cups at the Fall Fair. Which cup uses less material? Assume that the bases are regular polygons.

lecture video lecture video lecture video solution video QR code

7

Calculate the surface area of each regular pyramid.

lecture video lecture video lecture video solution video QR code

8

Calculate the surface area of each regular pyramid.

lecture video lecture video lecture video solution video QR code

9

Calculate the surface area of each regular pyramid.

lecture video lecture video lecture video solution video QR code

10

Calculate the surface area of each cone.

lecture video lecture video lecture video solution video QR code

11

Calculate the surface area of each cone.

lecture video lecture video lecture video solution video QR code

12

Calculate the surface area of each cone.

lecture video lecture video lecture video solution video QR code

13

Calculate the surface area of this pyramid.

lecture video lecture video lecture video solution video QR code

14

Salt is stored in a bin shaped like an inverted square-based pyramid. The sides of the base are 2.8 m long. The bin is 1.8 m high. Determine the surface area of the bin, including the square base.

lecture video lecture video lecture video solution video QR code

15

Determine the surface area of the tent. Include the floor in your calculation.

lecture video lecture video lecture video solution video QR code

16

Determine the surface area of a square pyramid with a height of `11.0` cm and a base area of 36.0 `cm^2`.

lecture video lecture video lecture video solution video QR code

17

Dennis bought a paperweight shaped like a regular hexagonal pyramid for his sister's birthday. It has a measure of `2.6` cm from the centre of its base to the midpoint of each side, a base perimeter of `18` cm, and a height of `4` cm. He wants to know if he has enough wrapping paper for it. Determine the pyramid's surface area.

lecture video lecture video lecture video solution video QR code

18

The Great Pyramid of Cheops was originally 147 m high. Its square base had a side length of 230.4 m.

Calculate the surface area of the Great Pyramid, including its base.

lecture video lecture video lecture video solution video QR code

19

Determine the slant height of a cone with a height of 8 cm and a radius of 4 cm.

lecture video lecture video lecture video solution video QR code

20

Calculate the surface area of a cone with slant height of a cone with a height of 8 cm and a radius of 4 cm.

lecture video lecture video lecture video solution video QR code

21

The Great Pyramid of Cheops was originally 147 m high. Its square base had a side length of 230.4 m.

The outside surface of each block in the Great Pyramid is 2.3 m by 1.8 m. Estimate the number of blocks that make up the outside facing of the Great Pyramid,

lecture video lecture video lecture video solution video QR code

22

Two regular octagonal pyramids are 8 cm high. Pyramid A has a surface area of 318.08 cm^2 and a measure of 6 cm from the centre of its base to the midpoint of each side. Pyramid B has a measure of 15 cm from the centre of the base to the midpoint of each side. What is the surface area of pyramid B?

lecture video lecture video lecture video solution video QR code

0

Each rectangle has a perimeter of 48 units. Predict which has the greatest area. Explain.

lecture video lecture video lecture video solution video QR code

1

Calculate the maximum area for a rectangle with perimeter of 100 cm.

lecture video lecture video lecture video solution video QR code

2

Calculate the maximum area for a rectangle with perimeter of 20 m.

lecture video lecture video lecture video solution video QR code

3

Calculate the maximum area for a rectangle with perimeter of 24 km.

lecture video lecture video lecture video solution video QR code

4

Draw rectangles with areas of 72 square units on grid paper. Determine which rectangle has the least perimeter, and then, calculate its perimeter.

lecture video lecture video lecture video solution video QR code

5

Rosie is building a rectangular garden centre with an area of `98 m^2` attached to the side of her store. Determine the minimum length of wood needed for a fence on the three open sides.

lecture video lecture video lecture video solution video QR code

6

Aryn is creating this tile pattern. She wants to use a right triangle tile and several square tiles around it. What is the area of each tile?

lecture video lecture video lecture video solution video QR code

7

A new covered walkway is being constructed to connect two malls. The rectangular space between the two malls is 8.0 m by 7.0 m. The walkway will connect the malls' opposite corners. How long is the reference chalk line drawn between the corners?

lecture video lecture video lecture video solution video QR code

8

Determine the surface area of each shape.

lecture video lecture video lecture video solution video QR code

9

Determine the surface area of each shape.

lecture video lecture video lecture video solution video QR code

10

Janice needs to re-shingle the roof of her house. One bundle of shingles costs `\$35.99` and covers `2.25` m`^2`.

a) How many bundles of shingles does she need for the roof?

b) What is the total cost of re-shingling the roof?

lecture video lecture video lecture video solution video QR code

0

Calculate the volume of the gift box.

lecture video lecture video lecture video solution video QR code

1

Sammy has a regular octagonal-based pyramidal paperweight filled with coloured liquid. It has distance of 4.2 cm from the centre of tis base to the midpoint of each side, a base perimeter of 19.0 cm, and a height of 6.0 cm. Determine the volume of the pyramid.

lecture video lecture video lecture video solution video QR code

2

A pyramid and a prism with the same height both have a base area of 64 `cm^2`. How do their volumes compare?

lecture video lecture video lecture video solution video QR code

3

For each right pyramid, the base is a regular polygon with a=4 cm and h=10 cm.

Find the volume in term of s.

lecture video lecture video lecture video solution video QR code

4

Calculate the volume of the cone.

lecture video lecture video lecture video solution video QR code

5

Determine the volume of sand that would fill a cone with a base radius of 6.5 cm and a height of 12.0 cm.

lecture video lecture video lecture video solution video QR code

6

Calculate the volume of the cone.

lecture video lecture video lecture video solution video QR code

7

Sand for icy roads is stored in a conical pile 14.2 m high with a base diameter of 34.4 m.

a) Calculate the volume of the pile.

b) One sander can take 6.9 m^3 of sand. How many sanders can be filled from the pile?

lecture video lecture video lecture video solution video QR code

8

One conical paper cup for a water fountain has a height of 9 cm and a radius of 3 cm. An average of 45 cups of water is drunk each day. What volume of water is drunk each week?

lecture video lecture video lecture video solution video QR code

9

A square-based pyramid has a volume of 100 cm^3 and a base of 40 cm^2. What is its height?

lecture video lecture video lecture video solution video QR code

10

Candles in the shape of square-based pyramids are sold in three volumes: 75 cm^3, 150 cm^3, and 175 cm^3. The base side length of each candle is 5 cm. What are the heights of the candles?

lecture video lecture video lecture video solution video QR code

0

Calculate the surface area of a tennis ball with a radius of 3.0 cm.

lecture video lecture video lecture video solution video QR code

1

Calculate the surface area of a soccer ball with a radius of 12 cm. Explain what you did.

lecture video lecture video lecture video solution video QR code

2

Earth has a circumference of about 40 000 km. Estimate its radius to the nearest tenth of a kilometre and use the radius to calculate the surface area to the nearest hundred square kilometres.

lecture video lecture video lecture video solution video QR code

3

Frederic has a sphere of clay with a radius of 10 cm.

He also has a sphere of clay with a radius of 20 cm.

- How much foil would be needed to wrap the larger sphere compared to the smaller one?

lecture video lecture video lecture video solution video QR code

4

A baseball has an inner core covered with string. The ball's circumference is between 23 cm and 23.5 cm. Between what values must the surface area fall?

lecture video lecture video lecture video solution video QR code

5

Calculate the volume of the beach ball.

lecture video lecture video lecture video solution video QR code

6

Calculate how much water you would need to fill a round water ballon with a radius of 5 cm.

lecture video lecture video lecture video solution video QR code

7

Kim runs a company that makes ball bearings. The bearings are shipped in boxes that are then loaded onto trucks. Each bearing has a diameter of 0.96 cm.

a) Each box can hold 8000 `cm^3` of ball bearings. How many ball bearings can a box hold?

b) Each ball bearing has a mass of 0.95 g. Determine the mass of each box.

c) The maximum mass a truck can carry is 11 000 kg. What is the maximum number of boxes that can be loaded into a truck?

d) Besides the ball bearings' mass, what else must Kim consider when loading a truck?

lecture video lecture video lecture video solution video QR code

8

Ice cream is sold to stores in cylindrical containers as shown. Each scoop of ice cream in a cone is a sphere with a diameter of `4.2 cm`.

a) How many scoops of ice cream are in each container?

b) An ice cream cone with one scoop sells for `\$0.86`. How much money will the ice cream store charge for each full cylinder of ice cream that it sells in cones?

lecture video lecture video lecture video solution video QR code

9

Frederic has a sphere of clay with a radius of 10 cm. What additional volume of clay does he need to enlarge his sphere to one with a radius of 20 cm?

lecture video lecture video lecture video solution video QR code

10

A pharmaceutical company creates a capsule for medication in the shape of a cylinder with hemispherical ends as shown. How much medication will the capsule hold?

lecture video lecture video lecture video solution video QR code

11

A ballon is inflated to a radius of 10 cm. By how much will the radius increase if you add 1 L of air to the balloon?

lecture video lecture video lecture video solution video QR code

12

Mars has a surface area of about `144 800 000 km^2`.

Determine the circumference of Mars to the nearest hundred kilometres.

lecture video lecture video lecture video solution video QR code

13

a) Complete the table.

```
\displaystyle \begin{array}{|c|c|c|c|} \hline Shape & Surface Area
\left(\mathrm{cm}^{2}\right) & Dimensions (\mathrm{cm}) & Volume
\left(\mathrm{cm}^{3}\right) \\ \hline square-based prism & 1000 & s=10, h=x & \\ \hline
cylinder & 1000 & r=10, h=x & \\ \hline sphere & 1000 & r \doteq x & \\ \hline
\end{array}
```

b) Which shape has the greatest volume?

lecture video lecture video lecture video solution video QR code

14

A tennis ball has a radius of 3.4 cm. Three tennis ball fits into a cylindrical container. What is the volume of this cylinder when its empty?

lecture video lecture video lecture video solution video QR code

15

A cylinder just fit inside a 10 cm by 10 cm by 10 cm cubic box. Which shape has the smaller surface area? Verify your answer by determining the surface area of each shape.

lecture video lecture video lecture video solution video QR code

16

Determine the surface area of a ball bearing with a volume of `6.75cm^3`.

lecture video lecture video lecture video solution video QR code

17

Which has a larger volume: a sphere with a radius of `r` or a cube with side length of `2r`? Which has a larger surface area?

lecture video lecture video lecture video solution video QR code

0

Aryn is creating a rectangular outdoor space for her pet rabbit. Fencing material costs $15.25/m. She has $145. What dimensions give the greatest area, to the nearest tenth of a metre?

lecture video lecture video lecture video solution video QR code

1

What is the minimum perimeter possible for a rectangle with an area of `500 cm^2`?

lecture video lecture video lecture video solution video QR code

2

Denzel wants to rope off a `800 m^2` rectangular swimming area using the beach as one of the sides. What should the dimensions of the rectangle be in order to use the minimum amount of rope?

lecture video lecture video lecture video solution video QR code

3

Sarah has 20 m of garden edging. What are the dimensions of the rectangular garden with the greatest area can she enclose with the edging?

lecture video lecture video lecture video solution video QR code

4

Calculate the area of the figure.

lecture video lecture video lecture video solution video QR code

5

A field has the dimensions shown.

a) Calculate the length of one lap of the track.

b) If Alice ran 625 m, how many laps did she run?

c) Calculate the area of the field.

lecture video lecture video lecture video solution video QR code

6

Calculate the area and perimeter of each regular polygon.

lecture video lecture video lecture video solution video QR code

7

Calculate the area and perimeter of each regular polygon.

lecture video lecture video lecture video solution video QR code

8

A baseball diamond is a square. The distance between the bases is 27.4 m. Calculate the direct distance from first base to third base.

lecture video lecture video lecture video solution video QR code

9

Find the length of x accurate to the nearest tenth.

lecture video lecture video lecture video solution video QR code

10

Determine the length of the fence around the playground.

lecture video lecture video lecture video solution video QR code

11

A right triangle's legs are $\displaystyle 20 \mathrm{~cm}$ and $\displaystyle 48 \mathrm{~cm}$.
What is the area of the square whose side length is equal to the hypotenuse?

lecture video lecture video lecture video solution video QR code

12

Calculate the surface area of the regular pyramid.

lecture video lecture video lecture video solution video QR code

13

We want to paint the house shown below, including the door. For the roof, we want to re-shingle the entire roof. One 4L can of paint covers `35 m^2`. One bundle of shingles covers 2.25 `m^2`

Height from the ground to peak = 5.0 m

a) How many bundles of shingles do they need for the roof? (Hint: Find the slant height of the roof first.)

b) How many cans of paint do they need?

c) One can of paint is $29.95 and one bundle of shingles is $35.99. Find the total cost of the job.

lecture video lecture video lecture video solution video QR code

14

Determine the surface area of a square-based pyramidal candle with a base side length of 8 cm and a slant height of 10 cm.

lecture video lecture video lecture video solution video QR code

15

Calculate the volume and surface area of each figure.

lecture video lecture video lecture video solution video QR code

16

Gum is packaged in a square-based pyramid- shaped box with a distance of 6 cm from the centre of the base to the sides and a height of 12 cm.

a) How much material was used to create the box?

b) What is the volume of the box?

lecture video lecture video lecture video solution video QR code

17

Determine the height of a square-based pyramid with a base side length of 8.0 cm and a surface area of 440.0 cm^2.

lecture video lecture video lecture video solution video QR code

18

Calculate the volume and surface area of each figure.

lecture video lecture video lecture video solution video QR code

19

A solid figure is said to be truncated when a portion of the bottom is cut and removed. The cut line must be parallel to the base. Many paper cups, such as the one shown here, are truncated cones. Calculate the volume of this paper cup.

lecture video lecture video lecture video solution video QR code

20

Calculate the volume and surface area of this sphere.

lecture video lecture video lecture video solution video QR code

21

A spherical bar of soap just fits inside its package, which is a cube with a side length of 8 cm.

a) What is the volume of the bar of soap.

b) Calculate the amount of empty space in the box.

lecture video lecture video lecture video solution video QR code

0

lecture video lecture video lecture video solution video QR code

1

lecture video lecture video lecture video solution video QR code

2

Determine the length of the red line segment.

A. 60 cm

B. 35 cm

C. 30 cm

D. 16 cm

lecture video lecture video lecture video solution video QR code

3

lecture video lecture video lecture video solution video QR code

4

lecture video lecture video lecture video solution video QR code

5

lecture video lecture video lecture video solution video QR code

6

lecture video lecture video lecture video solution video QR code

7

lecture video lecture video lecture video solution video QR code

8

lecture video lecture video lecture video solution video QR code

9

lecture video lecture video lecture video solution video QR code

Chapter 9 Appendix Topics

0

Write the product represented by each power. Then, evaluate the expression.

```
\displaystyle 2^{2}
```

lecture video lecture video lecture video solution video QR code

1

Write the product represented by each power. Then, evaluate the expression.

```
\displaystyle 2^{3}
```

lecture video lecture video lecture video solution video QR code

2

Write the product represented by each power. Then, evaluate the expression.

```
\displaystyle 2^{4}
```

lecture video lecture video lecture video solution video QR code

3

Write the product represented by each power. Then, evaluate the expression.

```
\displaystyle 3^{2}
```

lecture video lecture video lecture video solution video QR code

4

Write the product represented by each power. Then, evaluate the expression.

```
\displaystyle 10^{3}
```

lecture video lecture video lecture video solution video QR code

5

Write the product represented by each power. Then, evaluate the expression.

```
\displaystyle 10^{4}
```

lecture video lecture video lecture video solution video QR code

6

Write the product represented by each power. Then, evaluate the expression.

```
\displaystyle 4^{2}
```

lecture video lecture video lecture video solution video QR code

7

Write the product represented by each power. Then, evaluate the expression.

```
\displaystyle 4^{3}
```

lecture video lecture video lecture video solution video QR code

8

Write the product represented by each power. Then, evaluate the expression.

```
\displaystyle 5^{3}
```

lecture video lecture video lecture video solution video QR code

9

Write the product represented by each power. Then, evaluate the expression.

```
\displaystyle 5^{5}
```

lecture video lecture video lecture video solution video QR code

0

Evaluate using the rules for order of operations.

```
\displaystyle (3+6 \div 3)^{2}
```

lecture video lecture video lecture video solution video QR code

1

Evaluate using the rules for order of operations.

```
\displaystyle 4\left(2^{3}-3 \times 2\right)
```

lecture video lecture video lecture video solution video QR code

2

Evaluate using the rules for order of operations.

```
\displaystyle 2\left(3^{2}+1\right) \div 5
```

lecture video lecture video lecture video solution video QR code

3

Evaluate using the rules for order of operations.

```
\displaystyle (9+1)^{3} \div\left(3^{2}+1\right)
```

lecture video lecture video lecture video solution video QR code

4

Evaluate using the rules for order of operations.

```
\displaystyle [(8+6 \div 3)-5]^{2}
```

lecture video lecture video lecture video solution video QR code

5

Evaluate using the rules for order of operations.

```
\displaystyle 4\left[\left(32-5^{2}\right)-\left(2^{3}-1\right)\right]
```

lecture video lecture video lecture video solution video QR code

0

Represent each operation using integer counters or a number line.

```
\displaystyle -6+(-3)
```

lecture video lecture video lecture video solution video QR code

1

Represent each operation using integer counters or a number line.

```
\displaystyle 5+(-2)
```

lecture video lecture video lecture video solution video QR code

2

Represent each operation using integer counters or a number line.

```
\displaystyle -23+8
```

lecture video lecture video lecture video solution video QR code

3

Determine each sum.

```
\displaystyle -3+(-2)
```

lecture video lecture video lecture video solution video QR code

4

Determine each sum.

```
\displaystyle 2+(-3)
```

lecture video lecture video lecture video solution video QR code

5

Determine each sum.

```
\displaystyle -40+(-15)
```

lecture video lecture video lecture video solution video QR code

6

Calculate.

```
\displaystyle 3-(-4)+10
```

lecture video lecture video lecture video solution video QR code

7

Calculate.

```
\displaystyle -7+2-(-1)
```

lecture video lecture video lecture video solution video QR code

8

Calculate.

```
\displaystyle -5-(-3)+4
```

lecture video lecture video lecture video solution video QR code

9

Calculate.

```
\displaystyle -41+(-32)+15
```

lecture video lecture video lecture video solution video QR code

10

Represent each operation using integer counters or a number line.

```
\displaystyle 5-(-4)
```

lecture video lecture video lecture video solution video QR code

11

Determine each difference.

```
\displaystyle 4-(-3)
```

lecture video lecture video lecture video solution video QR code

12

Determine each difference.

```
\displaystyle -5-(-2)
```

lecture video lecture video lecture video solution video QR code

13

Determine each difference.

```
\displaystyle 5-(-13)
```

lecture video lecture video lecture video solution video QR code

14

Determine each difference.

```
\displaystyle -14-(-7)
```

lecture video lecture video lecture video solution video QR code

15

Determine each difference.

```
\displaystyle 6-(-6)
```

lecture video lecture video lecture video solution video QR code

16

Represent each operation using integer counters or a number line.

```
\displaystyle -20-16
```

lecture video lecture video lecture video solution video QR code

17

Represent each operation using integer counters or a number line.

```
\displaystyle -9-6
```

lecture video lecture video lecture video solution video QR code

18

Determine each sum.

```
\displaystyle -18+8
```

lecture video lecture video lecture video solution video QR code

19

Determine each sum.

```
\displaystyle -6+4
```

lecture video lecture video lecture video solution video QR code

20

Determine each difference.

```
\displaystyle -43-4
```

lecture video lecture video lecture video solution video QR code

21

Determine each sum.

```
\displaystyle 32+(-46)
```

lecture video lecture video lecture video solution video QR code

0

Represent each operation using integer counters or a number line.

```
\displaystyle -2 \times 5
```

lecture video lecture video lecture video solution video QR code

1

Represent each operation using integer counters or a number line.

```
\displaystyle -5 \times(-4)
```

lecture video lecture video lecture video solution video QR code

2

Calculate each quotient.

```
-30 \div (-15)
```

lecture video lecture video lecture video solution video QR code

3

Evaluate.

```
\displaystyle (-5)(-5)
```

lecture video lecture video lecture video solution video QR code

4

Evaluate.

```
\displaystyle -56 \div 8
```

lecture video lecture video lecture video solution video QR code

5

Represent each operation using integer counters or a number line.

```
\displaystyle 3 \times(-6)
```

lecture video lecture video lecture video solution video QR code

6

Calculate the product.

(-3)(2)

lecture video lecture video lecture video solution video QR code

7

Calculate the product.

(4)(-3)

lecture video lecture video lecture video solution video QR code

8

Calculate the product.

(-2)(7)

lecture video lecture video lecture video solution video QR code

9

Represent each operation using integer counters or a number line.

```
\displaystyle -6 \times(-9)
```

lecture video lecture video lecture video solution video QR code

10

Calculate the product.

(-4)(-9)

lecture video lecture video lecture video solution video QR code

11

Calculate the product.

(-7)(-3)

lecture video lecture video lecture video solution video QR code

12

Calculate the product.

(5)(4)

lecture video lecture video lecture video solution video QR code

13

Evaluate.

```
\displaystyle (-2)(5)(-4)
```

lecture video lecture video lecture video solution video QR code

14

Evaluate.

```
\displaystyle (8)(4) \div(-2)
```

lecture video lecture video lecture video solution video QR code

15

Evaluate.

```
(4)(81) \div (-27)(-2)
```

lecture video lecture video lecture video solution video QR code

16

Evaluate.

```
64 \div [(-4)(-4)(-4)]
```

lecture video lecture video lecture video solution video QR code

0

Represent each operation using a grid, fraction strips, or a number line.

```
\displaystyle \frac{3}{4}+\frac{1}{5}
```

lecture video lecture video lecture video solution video QR code

1

Evaluate.

```
\displaystyle \frac{3}{4}+\frac{3}{10}
```

lecture video lecture video lecture video solution video QR code

2

Evaluate.

```
\displaystyle \frac{2}{5}+\frac{6}{7}
```

lecture video lecture video lecture video solution video QR code

3

Evaluate.

```
\displaystyle \frac{7}{2}+\frac{3}{5}
```

lecture video lecture video lecture video solution video QR code

4

Represent each operation using a grid, fraction strips, or a number line.

```
\displaystyle \frac{2}{9}+\frac{5}{9}
```

lecture video lecture video lecture video solution video QR code

5

Represent each operation using a grid, fraction strips, or a number line.

```
\displaystyle \frac{3}{8}+\frac{1}{8}
```

lecture video lecture video lecture video solution video QR code

6

Add.

```
\displaystyle \frac{1}{7}+\frac{3}{7}
```

lecture video lecture video lecture video solution video QR code

7

Add.

```
\displaystyle \frac{2}{9}+\frac{5}{9}
```

lecture video lecture video lecture video solution video QR code

8

Add.

```
\displaystyle \frac{3}{8}+\frac{1}{8}
```

lecture video lecture video lecture video solution video QR code

9

Represent each operation using a grid, fraction strips, or a number line.

```
\displaystyle \frac{1}{3}+\frac{1}{9}
```

lecture video lecture video lecture video solution video QR code

10

Add.

```
\displaystyle \frac{1}{3}+\frac{1}{9}
```

lecture video lecture video lecture video solution video QR code

11

Add.

```
\displaystyle \frac{1}{3}+\frac{1}{6}
```

lecture video lecture video lecture video solution video QR code

12

Add.

```
\displaystyle \frac{1}{3}+\frac{5}{12}
```

lecture video lecture video lecture video solution video QR code

13

Subtract.

```
\displaystyle \frac{7}{15}-\frac{2}{5}
```

lecture video lecture video lecture video solution video QR code

14

Subtract.

```
\displaystyle \frac{1}{3}-\frac{1}{6}
```

lecture video lecture video lecture video solution video QR code

15

Subtract.

```
\frac{5}{9} - \frac{1}{9}
```

lecture video lecture video lecture video solution video QR code

16

Subtract.

```
\displaystyle \frac{14}{15}-\frac{7}{15}
```

lecture video lecture video lecture video solution video QR code

17

Subtract.

```
\displaystyle \frac{5}{6}-\frac{3}{8}
```

lecture video lecture video lecture video solution video QR code

18

Subtract.

```
\displaystyle \frac{3}{4}-\frac{1}{6}
```

lecture video lecture video lecture video solution video QR code

19

Evaluate.

```
\displaystyle \frac{4}{3}-\frac{2}{11}
```

lecture video lecture video lecture video solution video QR code

20

Evaluate.

```
\displaystyle \frac{8}{15}-\frac{1}{16}
```

lecture video lecture video lecture video solution video QR code

21

Evaluate.

```
\displaystyle \frac{14}{5}-\frac{5}{7}
```

lecture video lecture video lecture video solution video QR code

0

Find the measure of each unknown angle.

lecture video lecture video lecture video solution video QR code

1

Find the measure of each unknown angle.

lecture video lecture video lecture video solution video QR code

2

Find the measure of each unknown angle.

lecture video lecture video lecture video solution video QR code

3

Find each missing measure.

lecture video lecture video lecture video solution video QR code

4

Find the measure of each unknown angle.

lecture video lecture video lecture video solution video QR code

5

Find the measure of each unknown angle.

lecture video lecture video lecture video solution video QR code

6

Find each missing measure.

lecture video lecture video lecture video solution video QR code

7

Find each missing measure.

lecture video lecture video lecture video solution video QR code

8

Find the measure of each unknown angle.

lecture video lecture video lecture video solution video QR code

9

Find the measure of each unknown angle.

lecture video lecture video lecture video solution video QR code

10

Find the measure of each unknown angle.

lecture video lecture video lecture video solution video QR code

11

Find each missing measure.

lecture video lecture video lecture video solution video QR code

0

Solve.

$n+3 = 7$

lecture video lecture video lecture video solution video QR code

1

Solve.

$n + 3 = 7$

lecture video lecture video lecture video solution video QR code

2

Solve.

$9= 3+x$

lecture video lecture video lecture video solution video QR code

3

Solve.

$9+g=3$

lecture video lecture video lecture video solution video QR code

4

Solve.

$n-4=7$

lecture video lecture video lecture video solution video QR code

5

Solve.

$z-2=13$

lecture video lecture video lecture video solution video QR code

6

Solve.

```
\displaystyle 2 x=6
```

lecture video lecture video lecture video solution video QR code

7

Solve.

```
\displaystyle 3 n=18
```

lecture video lecture video lecture video solution video QR code

8

Solve.

```
\displaystyle 4 c=-16
```

lecture video lecture video lecture video solution video QR code

9

Solve.

```
\displaystyle -4 m=20
```

lecture video lecture video lecture video solution video QR code

10

Solve.

```
\displaystyle -30=6 h
```

lecture video lecture video lecture video solution video QR code

11

Solve.

```
\displaystyle -25=-5 a
```

lecture video lecture video lecture video solution video QR code