PrepBox

Subject: 9 Math

Curriculum: Canadian Curriculum

PrepBox

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Chapter 1 Rational Numbers

1.1 Adding Mixed Fractions

Accompanying lectures for questions 1 - 5

Question 1: Add.

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

Solution Video

Question 2: Add.

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

Solution Video

Question 3: Add.

$$\frac{7}{10} + \frac{4}{6}$$

Solution Video

Question 4: Add the following.

$$\frac{1}{15} + \frac{1}{12}$$

Solution Video

Question 5: Describe a situation in which you might add $\frac{1}{3} + \frac{1}{4} + \frac{1}{2}$.

Solution Video

Accompanying lectures for questions 6 - 10

Question 6: Evaluate.

$(a)\ 4\frac{1}{2}+8\frac{1}{6}$ $(c)\ 4\frac{1}{3}+12\frac{5}{8}$ $(e)\ 34\frac{7}{10}+16\frac{3}{4}$
$(b)\ 3\frac{3}{4}+6\frac{1}{5}$ $(d)\ 1\frac{4}{5}+6\frac{2}{3}$ $(f)\ 11\frac{1}{2}+41\frac{3}{5}$

Solution Video

Question 7: Determine two mixed numbers, with different denominators, that have the following properties.

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

Solution Video

Question 8: 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 $\frac{3}{7}+1\frac{2}{5}$?

Solution Video

Question 9: 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).

Solution Video

Question 10: The sum of two mixed numbers is $2\frac{1}{2}$ more than the difference. What are the two numbers?

Solution Video

Accompanying lectures for questions 11 - 21

Question 11: Subtract.

$5\frac{5}{7} - 1\frac{2}{7}$

Solution Video

Question 12: Subtract the following improper fractions in the fewest steps possible. Reduce your final answer.

$12\frac{14}{13} - 3\frac{5}{3} =$

Solution Video

Question 13: Subtract the following improper fractions in the fewest steps possible. Reduce your final answer.

$5\frac{21}{5} - \frac{21}{3} =$

Solution Video

Question 14: Evaluate.

$(a) \quad \frac{3}{5} + 1\frac{2}{7} \qquad (b) \quad \frac{3}{11} - 1\frac{1}{9}$

Solution Video

Question 15: Calculate.

$$9\frac{1}{7} - 4\frac{4}{5}$$

Solution Video

Question 16: Find each difference.

$$2\frac{2}{3} - 7\frac{1}{3}$$

Solution Video

Question 17: Evaluate.

a) $8\frac{1}{4} - 2\frac{1}{2}$

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

Solution Video

Question 18: Calculate without using a calculator.

$5\frac{5}{6} - 3\frac{3}{4}$

Solution Video

Question 19: Calculate.

$\frac{38}{5} - 3\frac{1}{2}$

Solution Video

Question 20: 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 $3\frac{5}{6} - 2$?

Solution Video

Question 21: Evaluate.

a) $3\frac{1}{2} - 1\frac{1}{5}$

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

Solution Video

Accompanying lectures for questions 22 - 34

Question 22: Draw a model to show each calculation. Then determine the sum or difference.

a) $\frac{3}{4} + \frac{5}{6}$

b) $\frac{3}{8} - \frac{1}{6}$

Solution Video

Question 23: Mei used a number line to model each calculation. Explain how you know that her model is correct.

$2\frac{1}{3} + 3\frac{1}{6} = 5\frac{1}{2}$

Solution Video

Question 24: Use fraction strips to to evaluate each expression. What is the value of each expression?

$9\frac{1}{8} - 6\frac{3}{4}$

Solution Video

Question 25: Use number lines to evaluate the following expressions.

$$7\frac{3}{8} + 4\frac{1}{8}$$

Solution Video

Question 26: Use number lines to evaluate the following mixed fractions.

$$7\frac{3}{8} - 4\frac{1}{8}$$

Solution Video

Question 27: Use number lines to evaluate the mixed fractions.

$$6\frac{3}{8} + 5\frac{2}{3}$$

Solution Video

Question 28: Use number lines to evaluate the following expressions.

$3\frac{2}{5} - 1\frac{4}{5}$

Solution Video

Question 29: Between which two whole numbers will leach sum lie?

$4\frac{1}{2} + 8\frac{1}{6}$

Solution Video

Question 30: Between which two whole numbers will leach sum lie?

$3\frac{3}{4} + 6\frac{1}{5}$

Solution Video

Question 31: Between which two whole numbers will leach sum lie?

$$4\frac{1}{3} + 12\frac{5}{8}$$

Solution Video

Question 32: Between which two whole numbers will leach sum lie?

$$1\frac{4}{5} + 6\frac{2}{3}$$

Solution Video

Question 33: Between which two whole numbers will leach sum lie?

$$34\frac{7}{10} + 16\frac{3}{4}$$

Solution Video

Question 34: Between which two whole numbers will leach sum lie?

$$11\frac{1}{2} + 41\frac{3}{5}$$

Solution Video

Accompanying lectures for questions 35 - 44

Question 35: 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?

Solution Video

Question 36: 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?

Solution Video

Question 37: A pitcher of juice is half empty. After $\frac{1}{2}$ cup of juice is added, the pitcher is $\frac{3}{4}$ full. How much juice does the pitcher hold when it is full? Show your thinking.

Solution Video

Question 38: Which of these differences is greater than $\frac{1}{2}$? How do you know?

i) $\frac{5}{6} - \frac{2}{3}$

ii) $\frac{5}{6} - \frac{1}{2}$

iii) $\frac{5}{6} - \frac{1}{6}$

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

Solution Video

Question 39: There are $3\frac{3}{4}$ c of flour, $1\frac{1}{2}$ c of sugar, $\frac{2}{3}$ c of brown sugar, and $\frac{1}{4}$c of oil in a cake mix. How many cups of ingredients are there in all?

A $4\frac{1}{2}$c

C $5\frac{1}{2}$c

B $5\frac{1}{6}$c

D $6\frac{1}{6}$c

Solution Video

Question 40: Franca is training to become a hospital aide. The first training session she attends is $3\frac{1}{2}$ days long. The second session is $1\frac{3}{4}$ days long. How long, in total is her training?

Solution Video

Question 41: A jug holds 2 cups of liquid. A recipe for punch is $\frac{1}{2}$ cup of orange juice, $\frac{1}{4}$ cup of raspberry juice, $\frac{3}{8}$ cup of grapefruit juice, and $\frac{5}{8}$ cup of lemonade. Is the jug big enough for punch? Explain.

Solution Video

Question 42: Kelly had $\frac{3}{4}$ of a tank of gas at the beginning of the week. At the end of the of the week, Kelly had $\frac{1}{8}$ of a tank left.

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

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

Solution Video

Question 43: 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?

Solution Video

Question 44: Five friends shared two pizzas. Fran ate $\frac{1}{3}$ of a pizza, Abdul ate $\frac{3}{8}$ of a pizza, Hannah ate $\frac{1}{4}$ of a pizza, and Siva ate $\frac{1}{2}$ of a pizza. What fraction of the pizza remains for Brad?

Solution Video

1.2 Multiplying and Dividing Fractions

Accompanying lectures for questions 45 - 48

Question 45: Draw each rectangle on grid paper. Use the rectangle to find each product.

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

Solution Video

Question 46: Multiply. Draw a picture to show each answer.

$$\frac{2}{15} \times 10$$

Solution Video

Question 47: Use fraction strip to show the following visually.

$\frac{5}{6}$ of $\frac{1}{2}$

Solution Video

Accompanying lectures for questions 45 - 48

Question 48: What division expression does each picture represent?

Solution Video

Accompanying lectures for questions 49 - 57

Question 49: Calculate.

$\frac{3}{7} \times 3\frac{1}{2}$

Solution Video

Question 50: Convert the following fractions into Improper form of the fraction.

$12\frac{1}{5} \times 1\frac{3}{5} =$

Solution Video

Question 51: Convert the following fractions into Improper form of the fraction.

$4\frac{3}{7} \times 2\frac{2}{11} =$

Solution Video

Question 52: Calculate each product without using any calculator.

$$\frac{3}{4} \times 6\frac{11}{12}$$

Solution Video

Question 53: Evaluate.

$$3\frac{1}{5} \cdot \frac{3}{4}$$

Solution Video

Question 54: Calculate each product without using any calculator.

$$4\frac{1}{8} \times 5\frac{1}{3}$$

Solution Video

Question 55: Multiply.

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

Solution Video

Question 56: Show each multiplication using a different model. Determine the product.

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

Solution Video

Question 57: Without using your calculator, showing your working clearly, evaluate the following:

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

Solution Video

Accompanying lectures for questions 58 - 59

Question 58: Evaluate $\frac{2}{3} \div \frac{1}{4}$.

Solution Video

Question 59: Calculate.

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

Solution Video

Accompanying lectures for questions 60 - 71

Question 60: Divide the following mixed numbers.

$$1\frac{2}{5} \div 1\frac{1}{25}$$

Solution Video

Question 61: Convert the following fractions into Improper form then divide.

$$2\frac{5}{6} \div 1\frac{1}{6}$$

Solution Video

Question 62: Convert the following fractions into Improper form then divide.

$$4\frac{3}{7} \div 2\frac{2}{21}$$

Solution Video

Question 63: Calculate each quotient.

$9\frac{2}{3} \div 2\frac{2}{3}$

Solution Video

Question 64: Calculate each quotient.

$2\frac{7}{8} \div 3\frac{5}{6}$

Solution Video

Question 65: Calculate each quotient.

$8\frac{2}{3} \div 10\frac{1}{2}$

Solution Video

Question 66: Calculate each quotient.

$8\frac{3}{4} \div 5\frac{2}{5}$

Solution Video

Question 67: Calculate

$1\frac{2}{3} \div 5\frac{5}{6}$

Solution Video

Question 68: Dividing a number by $5\frac{1}{2}$ give the same answers as multiplying the number by ?

Solution Video

Question 69: For **i)**, determine the number represented by the rectangle and the triangle.

Solution Video

Question 70: Determine the number represented by the rectangle and the triangle.

$4\frac{3}{4} \div 1\frac{1}{6} = \square$

$\square \times 1\frac{1}{6} = \triangle$

Solution Video

Question 71: Without calculating the quotient, how do you know that $4\frac{2}{3} \div 10\frac{1}{4}$ has to be less than $\frac{1}{2}$?

Solution Video

Accompanying lectures for questions 72 - 72

Question 72: Determine the value of x that makes each statement true.

$$2^x = \frac{1}{4}$$

Solution Video

Accompanying lectures for questions 73 - 72

Accompanying lectures for questions 73 - 75

Question 73: Are these two calculations equal? Show your work.

$$\frac{4}{9} \div \frac{2}{3} \text{ and } \frac{4 \div 2}{9 \div 3}$$

Solution Video

Question 74: Show that the two calculations are equivalent in each set below.

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

Solution Video

Question 75: Show that the two calculations are equivalent in each set below.

$$\frac{35}{48} \div \frac{5}{12} \text{ and } \frac{35 \div 5}{48 \div 12}$$

Solution Video

Accompanying lectures for questions 76 - 77

Question 76: 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?

Solution Video

Question 77: 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?

Solution Video

Accompanying lectures for questions 78 - 78

Question 78: Which whole numbers, N, find N to make the product of $3\frac{1}{5}$ and $N\frac{3}{4}$ great than 25?

Solution Video

Accompanying lectures for questions 79 - 81

Question 79: Why does finding out how many $\frac{3}{4}$ strips fit along the length of 4 whole strips help you solve the problem?

Solution Video

Question 80: 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.

Solution Video

Question 81: 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?

Solution Video

1.3 Integer & Powers

Accompanying lectures for questions 82 - 85

Question 82: Determine each quotient. Multiply to check.

$\frac{192}{-12}$

Solution Video

Question 83: Calculate.

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

Solution Video

Question 84: Calculate

$$\frac{-4(15)}{-10}$$

Solution Video

Accompanying lectures for questions 82 - 85

Question 85: Use the fact that $n \times \frac{1}{n} = \frac{n}{n} = 1$, reciprocal rule to simplify the following expressions.

$$\frac{3 \times 7 \times 6}{-9 \times 14}$$

Solution Video

Accompanying lectures for questions 86 - 103

Question 86: Find each product.

-5^2

Solution Video

Question 87: Evaluate.

$(-2)^6$

Solution Video

Question 88: Without calculating, state whether the answer will be positive or negative.

$-(-2)^3$

Solution Video

Question 89: Without calculating, state whether the answer will be positive or negative.

-2^4

Solution Video

Question 90: Without calculating, state whether the answer will be positive or negative.

$-(-2)^4$

Solution Video

Question 91: Without calculating, state whether the answer will be positive or negative.

$-(-2^4)$

Solution Video

Question 92: **(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.

Solution Video

Question 93: Determine the value that makes each equation true.

$\bigcirc^3 = -27$

Solution Video

Question 94: Determine the value that makes each equation true.

$-\bigcirc^2 = -25$

Solution Video

Question 95: Determine the value that makes each equation true.

$-4^{\bigcirc} = -64$

Solution Video

Question 96: Evaluate.

-5^3

Solution Video

Question 97: Evaluate.

-4^3

Solution Video

Question 98: Evaluate.

$-(-3)^4$

Solution Video

Question 99: Evaluate.

$(-6)^2$

Solution Video

Question 100: Evaluate.

$(-4)^3$

Solution Video

Question 101: Evaluate.

$-(-3)^3$

Solution Video

Question 102: Solving the equation $\bigcirc^2 = 64$ give two possible integer values. Determine all possible values.

Solution Video

Question 103: Evaluate each expression without using a calculator.

$5(-2)^3$

Solution Video

Accompanying lectures for questions 104 - 106

Question 104: Evaluate. Remember to use the correct order of operations.

$2^4 - 2^2 + 2^3$

Solution Video

Question 105: Evaluate each expression. Name the property used in each step.

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

Solution Video

Question 106: Evaluate.

$5^2 - 6^2 \div 2^2$

Solution Video

Accompanying lectures for questions 107 - 112

Question 107: Evaluate each expression without using a calculator.

$-4(-5) - (-3)^3$

Solution Video

Question 108: Evaluate each expression without using a calculator.

$$\frac{(-2)^2 - 22}{-3^2}$$

Solution Video

Question 109: Evaluate each expression without using a calculator.

$[-2(-1)^3]^6$

Solution Video

Question 110: Evaluate each expression without using a calculator.

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

Solution Video

Question 111: Find the error in each solution. Explain what was done incorrectly. Redo the solution, making the necessary

$$\begin{aligned} &-2(3)^2;\ \text{step 1} \\ &= (-6)^2;\ \text{step 2} \\ &= 36;\ \text{step 3} \end{aligned}$$

Solution Video

Question 112: Both Claire and Robin calculated $5(-2) - 3(-2)$. Clare's calculations

Clare's calculations

$$\begin{aligned} &5(-2) - 3(-2) \\ &\quad = -10 + 6 \\ &\quad\quad = -4 \end{aligned}$$

Robin's calculations

$$\begin{aligned} &5(-2) - 3(-2);\ \text{step 1} \\ &\quad = 2(-2);\ \text{step 2} \\ &\quad\quad = -4;\ \text{step 3} \end{aligned}$$

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

Solution Video

Accompanying lectures for questions 113 - 113

Question 113: Find the error in each solution. Explain what was done incorrectly. Redo the solution, making the necessary

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

Solution Video

Accompanying lectures for questions 114 - 116

Question 114: Evaluate each expression when $x = -2$ and $y = -1$.

$x^2 + y^3$

Solution Video

Question 115: Evaluate each expression when $x = -2$ and $y = -1$.

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

Solution Video

Question 116: Evaluate each expression when $x = -2$ and $y = -1$.

$x^2 + [5x - 2(y - x)]$

Solution Video

Accompanying lectures for questions 117 - 122

Question 117: Evaluate each expression when $x = -2$ and $y = -1$.

$5y^3(-x^4)$

Solution Video

Question 118: Evaluate each expression when $x = -2$ and $y = -1$.

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

Solution Video

Question 119: Evaluate each expression when $x = -2$ and $y = -1$.

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

Solution Video

Question 120: valuate the expression $-y^2 - 4x^3$ when $x = -2$ and $y = 3$.

Solution Video

Question 121: 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.

Solution Video

Question 122: 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.

Solution Video

Accompanying lectures for questions 123 - 123

Question 123: Evaluate the following

$(i)(-2)^3(-2)^4 \qquad (ii)(-2)^2(-2)^6 \qquad (iii)(-2)(-2)^5$

Solution Video

Accompanying lectures for questions 124 - 124

Question 124: Evaluate the following

$(i)\frac{(-3)^9}{(-3)^7}$ $(ii)\frac{(-3)^8}{(-3)^4}$ $(iii)\frac{(-3)^5}{(-3)}$

Solution Video

Accompanying lectures for questions 125 - 127

Question 125: Determine the value that makes each equation true.

$\bigcirc^5 = 32$

Solution Video

Question 126: Determine the value that makes each equation true.

$\bigcirc^5 = -32$

Solution Video

Question 127: Factor the polynomial.

$x^4 = 2^4$

Solution Video

Accompanying lectures for questions 128 - 130

Question 128: When $x = 2, y = -3$ and $z = -1$ find the value of

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

Solution Video

Question 129: Evaluate each expression for s =4 and t =8.

$3st^2 \div (st) + 6$

Solution Video

Question 130: Evaluate each expression for the given values.

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

Solution Video

Fractions Review

Accompanying lectures for questions 131 - 133

Question 131: Calculate.

$7\frac{1}{3} + 2\frac{1}{2}$

Solution Video

Question 132: Calculate.

$4\frac{2}{5} + 1\frac{3}{4}$

Solution Video

Question 133: Estimate each to whole number.

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

Solution Video

Accompanying lectures for questions 134 - 136

Question 134: Calculate.

$$6\frac{3}{4} - 6\frac{2}{3}$$

Solution Video

Question 135: Calculate.

$$9\frac{1}{7} - 4\frac{4}{5}$$

Solution Video

Question 136: Which of the following correctly explains $3\frac{1}{5} - 2\frac{1}{4}$ has the same answer as $\frac{3}{4} + \frac{1}{5}$?

Solution Video

Accompanying lectures for questions 137 - 137

Question 137: 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?

Solution Video

Accompanying lectures for questions 138 - 141

Question 138: Calculate each product without using a calculator.

$$2\frac{5}{8} \times \frac{4}{11}$$

Solution Video

Question 139: Calculate each product without using a calculator.

$$1\frac{3}{5} \times 1\frac{2}{7}$$

Solution Video

Question 140: Calculate each product without using a calculator.

$$2\frac{3}{5} \times 3\frac{1}{3}$$

Solution Video

Question 141: Calculate each product without using a calculator.

$7\frac{1}{5} \times 4\frac{5}{6}$

Solution Video

Accompanying lectures for questions 142 - 146

Question 142: Calculate each quotient without using a calculator.

$5\frac{3}{4} \div \frac{1}{2}$

Solution Video

Question 143: Calculate each quotient without using a calculator.

$\frac{1}{2} \div 5\frac{3}{4}$

Solution Video

Question 144: Calculate each quotient without using a calculator.

$6\frac{2}{3} \div 2\frac{1}{6}$

Solution Video

Question 145: Calculate each quotient without using a calculator.

$$10\frac{5}{8} \div 5\frac{1}{3}$$

Solution Video

Question 146: Find the missing value.

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

Solution Video

Accompanying lectures for questions 147 - 147

Question 147: Find the missing value.

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

Solution Video

Accompanying lectures for questions 148 - 149

Question 148: 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?

Solution Video

Question 149: Suppose the on screen cursor represents any numeric character. Determine the number of numeric characters that can fit on the calculator screen.

Solution Video

Accompanying lectures for questions 150 - 150

Question 150: Calculate

a) $(-11)^2$

b) $(-4)^2$

c) -7^2

d) -11^3

Solution Video

Accompanying lectures for questions 151 - 151

Question 151: Determine at least four other powers that have the same value as 8^2.

Solution Video

Accompanying lectures for questions 152 - 152

Question 152: Calculate. Show your steps.

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

Solution Video

Accompanying lectures for questions 153 - 154

Question 153: When $x = 2, y = -3$ and $z = -1$ find the value of

$x^2 + y^2 + z^2$

Solution Video

Question 154: When $x = 2, y = -3$ and $z = -1$ find the value of

$2[x - (y - z)^4]$

Solution Video

Accompanying lectures for questions 155 - 156

Question 155: When $x = 2, y = -3$ and $z = -1$ find the value of

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

Solution Video

Question 156: When $x = 2, y = -3$ and $z = -1$ find the value of

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

Solution Video

1.4 Rational Numbers

Accompanying lectures for questions 157 - 159

Question 157: Convert the following fractions into decimal.

$\frac{5}{6}$

Solution Video

Question 158: Convert the following fractions into decimal and decimal into fractions.

a) 0.12

b) $\frac{5}{8}$

Solution Video

Question 159: Convert the following decimal into fractions.

0.33

Solution Video

Accompanying lectures for questions 160 - 163

Question 160: Write each fraction as a decimal.

$$-\frac{4}{3}$$

Solution Video

Question 161: Rename the following rational numbers as decimals.

$$\frac{-3}{4}$$

Solution Video

Question 162: Rename the following rational numbers as decimals.

$$-\frac{3}{4}$$

Solution Video

Accompanying lectures for questions 160 - 163

Question 163: Rename the following rational numbers as decimals.

$-7\frac{5}{6}$

Solution Video

Accompanying lectures for questions 164 - 165

Question 164: Convert the following rational numbers as decimals.

$\frac{1}{5}$

Solution Video

Question 165: Write it as a decimal.

$(a)\ \frac{7}{1000}$ $(b)\ \frac{16}{100}$
$(c)\ \frac{843}{1000}$ $(d)\ \frac{91}{10000}$

Solution Video

Accompanying lectures for questions 166 - 179

Question 166: Convert the following decimal into fractions and reduce the fractions.

8.24

Solution Video

Question 167: Convert the following decimal into fractions.

0.255

Solution Video

Question 168: Rename the following rational numbers as quotients of integers.

-11.46

Solution Video

Question 169: Identify the values represented by a, b, c, d, and e, in decimal form.

Solution Video

Question 170: Identify the values represented by a, b, c, d, and e, as quotients of two integers.

Solution Video

Question 171: Use >, <, or = to make true statements. Explain how you know each statement is true.

$0 \bigcirc -0.5$

Solution Video

Question 172: Use >, <, or = to make true statements. Explain how you know each statement is true.

$-4.3 \bigcirc -3.4$

Solution Video

Question 173: Use >, <, or = to make true statements. Explain how you know each statement is true.

$-1\frac{2}{5} \bigcirc 1\frac{2}{5}$

Solution Video

Question 174: Use >, <, or = to make true statements. Explain how you know each statement is true.

$-4\frac{1}{2} \bigcirc -\frac{9}{2}$

Solution Video

Question 175: Use >, <, or = to make true statements. Explain how you know each statement is true.

$-2\frac{3}{10} \bigcirc -2.\bar{3}$

Solution Video

Question 176: True or false? Justify your answer.

All mixed numbers can be renamed as decimals.

Solution Video

Question 177: True or false? Justify your answer.

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

Solution Video

Question 178: True or false? Justify your answer.

$1 > -1000000$

Solution Video

Question 179: If a and b are positive numbers and $a < b$, how do $-a$ and $-b$ compare? Explain why.

Solution Video

Accompanying lectures for questions 180 - 181

Question 180: Write as an improper fraction:

$3\frac{2}{3}$

Solution Video

Question 181: Write as a mixed number:

$9\frac{14}{3}$

Solution Video

Accompanying lectures for questions 182 - 183

Question 182: Name three fractions between $\frac{2}{3}$ and $\frac{3}{8}$.

Solution Video

Question 183: Name three fractions between $\frac{2}{3}$ and $\frac{3}{8}$.

Solution Video

Accompanying lectures for questions 184 - 188

Question 184: Write each decimal as a fraction.

$0.0777...$

Solution Video

Question 185: Write each repeating decimal as a fraction in simplest form.

$0.\overline{5}$

Solution Video

Question 186: Convert the following decimal into fraction.

$0.3\overline{2}$

Solution Video

Question 187: Express the repeating decimal as a fraction.

$2.11\overline{25}$

Solution Video

Question 188: Write each repeating decimal as a fraction in simplest form.

$0.\overline{21}$

Solution Video

1.5 Rational Number Operations

Accompanying lectures for questions 189 - 189

Question 189: Evaluate without using a calculator.

$2.5 - 7.5$

Solution Video

Accompanying lectures for questions 190 - 190

Question 190: Evaluate without using a calculator.

$-2(9.5)$

Solution Video

Accompanying lectures for questions 191 - 192

Question 191: Evaluate without using a calculator.

$-4.2 + (-2.8)$

Solution Video

Question 192: Estimate the two consecutive integers between which each answer will lie.

$-9.37 - 5.93$

Solution Video

Accompanying lectures for questions 193 - 194

Question 193: Evaluate without using a calculator.

$$\frac{8}{-0.5}$$

Solution Video

Question 194: Estimate the two consecutive integers between which each answer will lie.

$$-\frac{3.046}{10}$$

Solution Video

Accompanying lectures for questions 195 - 196

Question 195: Evaluate without using a calculator. Clearly show how you simplified the negatives.

$$-\frac{4}{3}+\frac{1}{3}$$

Solution Video

Question 196: Calculate. Show your work.

$$\frac{6}{5}-\frac{3}{2}$$

Solution Video

Accompanying lectures for questions 197 - 196

Accompanying lectures for questions 197 - 204

Question 197: Evaluate without using a calculator. Clearly show how you simplified the negatives.

$$\frac{-4}{7} \times \frac{6}{-5}$$

Solution Video

Question 198: Which of the following correctly explains why below is equal or not equal to $\frac{3}{4}(\frac{5}{8})$.

$$-\frac{3}{4}(-\frac{5}{8})$$

Solution Video

Question 199: Which of the following correctly explains why below is equal or not equal to $\frac{3}{4}(\frac{5}{8})$?

$$\frac{-3}{4}(\frac{5}{-8})$$

Solution Video

Question 200: Which of the following correctly explains below is the same or different from $\frac{3}{4}(\frac{5}{8})$?

$\frac{-3}{4}(\frac{-5}{8})$

Solution Video

Question 201: Which of the following correctly explains below is the same or different from $\frac{3}{4}(\frac{5}{8})$.

$\frac{3}{-4}(-\frac{5}{8})$

Solution Video

Question 202: Calculate. Show your work.

$(\frac{5}{-12})(-\frac{8}{15})$

Solution Video

Question 203: Find the product. Show your work.

$-2\frac{1}{2}(-1\frac{3}{5})$

Solution Video

Question 204: Calculate. Show your work.

$3\frac{6}{7}(-\frac{1}{3})$

Solution Video

Accompanying lectures for questions 205 - 209

Question 205: Evaluate without using a calculator. Clearly show how you simplified the negatives.

$$\frac{2}{5} \div (-\frac{5}{8})$$

Solution Video

Question 206: Calculate. Show your work.

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

Solution Video

Question 207: Calculate. Show your work.

$$-4\frac{2}{3} \div \frac{7}{12}$$

Solution Video

Question 208: Calculate. Show your work.

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

Solution Video

Question 209: Evaluate.

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

Solution Video

Accompanying lectures for questions 210 - 210

Question 210: Estimate the two consecutive integers between which each answer will lie.

$3.64 + 72.9$

Solution Video

Accompanying lectures for questions 211 - 211

Question 211: Estimate the two consecutive integers between which each answer will lie.

$-6.5(-10.1)$

Solution Video

Accompanying lectures for questions 212 - 213

Question 212: 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?

Solution Video

Question 213: 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?

Solution Video

Accompanying lectures for questions 214 - 219

Question 214: Calculate. Show your work.

$$-\frac{3}{8}+1\frac{3}{4}$$

Solution Video

Question 215: Calculate. Show your work.

$$-5\frac{1}{2}+2\frac{2}{3}$$

Solution Video

Question 216: Calculate. Show your work.

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

Solution Video

Accompanying lectures for questions 214 - 219

Question 217: Calculate. Show your work.

$$-3\frac{1}{3} - 5\frac{4}{5}$$

Solution Video

Question 218: Calculate. Show your work.

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

Solution Video

Question 219: Evaluate each expression.

$$-\frac{2}{5} + \frac{3}{-4} - 2\frac{2}{3}$$

Solution Video

Accompanying lectures for questions 220 - 221

Question 220: Yolo takes $\frac{3}{4}$ hours to cut his family's front lawn and $1\frac{1}{3}$ hours to cut the back lawn. How much longer does it take Yolo to cut the back lawn?

Solution Video

Question 221: (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.

Solution Video

Accompanying lectures for questions 222 - 222

Question 222: Determine the value that makes each equation true

$$-\frac{3}{4} + \bigcirc = 1$$

Solution Video

Accompanying lectures for questions 223 - 223

Question 223: Determine the value that makes each equation true

$$-\frac{3}{4} - \bigcirc = 1$$

Solution Video

Accompanying lectures for questions 224 - 224

Question 224: Determine the value that makes each equation true

$$-\frac{3}{4} \times \bigcirc = 1$$

Solution Video

Accompanying lectures for questions 225 - 225

Question 225: Determine the value that makes each equation true

$$-\frac{3}{4} \div \bigcirc = 1$$

Solution Video

Accompanying lectures for questions 226 - 226

Question 226: Without calculating, determine the sign for each answer. Then, use a calculator to complete the calculation.

$-3.2(4.2-10)$

Solution Video

Accompanying lectures for questions 227 - 228

Question 227: Without calculating, determine the sign for each answer. Then, use a calculator to complete the calculation.

$-0.7 - 5.8(12)$

Solution Video

Question 228: Evaluate.

$-3.4(-2.3) + 5.7(-9.1)$

Solution Video

Accompanying lectures for questions 229 - 229

Question 229: Without calculating, determine the sign for each answer. Then, use a calculator to complete the calculation.

$(i) \quad 6.2(-3.1)(7.3-0.9) \quad (ii) \quad \frac{3.2}{-1.2}+\frac{-4.5}{-6} \quad (iii) \quad \frac{8.5-(-2.3)}{2(-1.2)}$

Solution Video

Accompanying lectures for questions 230 - 231

Question 230: Evaluate.

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

Solution Video

Question 231: Calculate using a calculator.

$$5.25(-2\tfrac{7}{8})-8.5(-3\tfrac{3}{4})$$

Solution Video

Accompanying lectures for questions 232 - 233

Question 232: Evaluate each expression.

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

Solution Video

Question 233: Calculate using a calculator.

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

Solution Video

Accompanying lectures for questions 234 - 238

Question 234: 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^oF to degrees Celsius.

Solution Video

Question 235: 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^oF to degrees Celsius.

Solution Video

Question 236: 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.

Solution Video

Question 237: 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^oC, to degrees Fahrenheit.

Solution Video

Question 238: 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°, to degrees Fahrenheit.

Solution Video

Accompanying lectures for questions 239 - 239

Question 239: Evaluate each expression for the given values.

$x - 2y$ when $x = -9.78$ and $y = 3.2$

Solution Video

Accompanying lectures for questions 240 - 241

Question 240: Evaluate each expression for the given values.

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

Solution Video

Question 241: Evaluate each expression for the given values.

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

Solution Video

Accompanying lectures for questions 242 - 242

Question 242: Evaluate each expression for the given values.

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

Solution Video

Accompanying lectures for questions 243 - 243

Question 243: 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.

Solution Video

Accompanying lectures for questions 244 - 245

Question 244: Calculate $-2\frac{3}{5}+1\frac{1}{4}$ without using a calculator.

Solution Video

Question 245: Calculate $-2\frac{4}{7}+1\frac{1}{6}$ without using a calculator.

Solution Video

Accompanying lectures for questions 246 - 247

Question 246: Calculate.

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

Solution Video

Question 247: Calculate.

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

Solution Video

Accompanying lectures for questions 248 - 249

Question 248: $1+\dfrac{1}{1+\frac{1}{1+\frac{1}{2}}}$ is an example of a continued fraction.

The continued fraction above is equal to?

Solution Video

Question 249: $1+\dfrac{1}{1+\frac{1}{1+\frac{1}{2}}}$ is an example of a continued fraction.

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

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

Solution Video

Accompanying lectures for questions 250 - 250

Question 250: 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.

Solution Video

1.6 Powers of Rational Numbers

Accompanying lectures for questions 251 - 256

Question 251: Evaluate the expression.

$(-3)^4$

Solution Video

Question 252: Use $4.5^2 = 20.25$ and $4.5^3 = 91.125$ to evaluate the powers.

$(-4.5)^3$

Solution Video

Question 253: Without evaluating, state if the answer is positive or negative.

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

b) $-(-\frac{2}{3})^3$

Solution Video

Question 254: Without evaluating, state if the answer is positive or negative.

a) $-(\frac{2}{3})^3$

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

Solution Video

Question 255: Evaluate the powers

$(a)\quad -\frac{4}{3}(-\frac{2}{3})^2 \quad (c)\quad -(-\frac{2}{3})^2 \quad (e)\quad -(\frac{2}{3})^3$

$(b)\quad -(\frac{2}{3})^2 \quad (d)\quad -(-\frac{2}{3})^3 \quad (f)\quad (\frac{-2}{-3})^5$

Solution Video

Question 256: Calculate.

$-2(-3.1)^3$

Solution Video

Accompanying lectures for questions 257 - 258

Question 257: Use $4.5^2 = 20.25$ and $4.5^3 = 91.125$ to evaluate the powers.

-4.5^2

Solution Video

Question 258: Without evaluating, state if the answer is positive or negative.

a) $-\frac{4}{3}$

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

Solution Video

Accompanying lectures for questions 259 - 259

Question 259: Use $4.5^2 = 20.25$ and $4.5^3 = 91.125$ to evaluate the powers.

-4.5^3

Solution Video

Accompanying lectures for questions 260 - 268

Question 260: Evaluate $-4.5 + 2(3.1 - 9.8)^2$.

Solution Video

Question 261: Calculate.

$8.9 - 3.2^2$

Solution Video

Question 262: Calculate.

$0.6^2 - 2(3.4 - 5.2)$

Solution Video

Question 263: Calculate.

$$-6.02 - 2(-6.71) + 2.3^3$$

Solution Video

Question 264: Calculate.

$$\frac{2.3^3 - 5.4}{-3^2}$$

Solution Video

Question 265: Calculate.

$$\frac{2.3^3 - 5.4}{-3^2}$$

Solution Video

Question 266: Calculate.

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

Solution Video

Question 267: Calculate.

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

Solution Video

Question 268: Calculate.

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

Solution Video

Accompanying lectures for questions 269 - 269

Question 269: Calculate.

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

Solution Video

Accompanying lectures for questions 270 - 270

Question 270: 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.

Solution Video

Accompanying lectures for questions 271 - 271

Question 271: 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.

Solution Video

Accompanying lectures for questions 272 - 272

Question 272: 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.

Solution Video

Accompanying lectures for questions 273 - 274

Question 273: Evaluate the following expressions.

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

Solution Video

Question 274: Evaluate the following expressions.

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

Solution Video

Accompanying lectures for questions 275 - 275

Question 275: Solve for x.

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

Solution Video

Chapter Review

Accompanying lectures for questions 276 - 278

Question 276: Calculate without using a calculator.

$$1\frac{2}{3} + 9\frac{1}{2}$$

Solution Video

Question 277: Calculate without using a calculator.

$$4\frac{3}{8} + 2\frac{1}{4}$$

Solution Video

Question 278: Calculate. Show your work.

$$2\frac{1}{4} - 5\frac{1}{3}$$

Solution Video

Accompanying lectures for questions 279 - 281

Question 279: Calculate without using a calculator.

$$8\frac{1}{6} - 7\frac{2}{3}$$

Solution Video

Question 280: Calculate without using a calculator.

$$5\frac{5}{6} - 3\frac{3}{4}$$

Solution Video

Question 281: Calculate. Show your work.

$$-5\frac{2}{5} + 2\frac{3}{4}$$

Solution Video

Accompanying lectures for questions 282 - 283

Question 282: Calculate without using a calculator.

$$1\frac{3}{4} \times 3\frac{1}{2}$$

Solution Video

Question 283: Calculate without using a calculator.

$$5\frac{7}{9} \times 6\frac{3}{4}$$

Solution Video

Accompanying lectures for questions 284 - 284

Question 284: Calculate without using a calculator.

$$1\frac{2}{3} \div 4\frac{5}{6}$$

Solution Video

Accompanying lectures for questions 285 - 284

Accompanying lectures for questions 285 - 285

Question 285: Which of the following explains the two are either same or not same? -8^2 and $(-8)^2$.

HINT

Solution Video

Accompanying lectures for questions 286 - 291

Question 286: Evaluate.

$(-8+2)^2 \div (-4+2)^2$

Solution Video

Question 287: Evaluate.

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

Solution Video

Question 288: Evaluate.

$16-[3(6-3)-12]$

Solution Video

Question 289: Evaluate.

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

Solution Video

Question 290: Calculate. Show your steps.

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

Solution Video

Question 291: Calculate. Show your steps.

$$9.1^3 - 6.7^2$$

Solution Video

Accompanying lectures for questions 292 - 294

Question 292: Evaluate.

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

Solution Video

Question 293: Evaluate.

$yx^2 + xy$ for $x = -4$ and $y = 5$

Solution Video

Question 294: Evaluate each.

$(3a - 2b)^3$ when $a = -1.1, b = 2.2$

Solution Video

Accompanying lectures for questions 295 - 295

Question 295: Evaluate.

$\dfrac{-x^4 - 5x}{x + (-1)^3}$ for $x = -2$

Solution Video

Accompanying lectures for questions 296 - 296

Question 296: What two integers is -2.6 located on the number line.

Solution Video

Accompanying lectures for questions 297 - 297

Question 297: What two integers is $-\frac{24}{5}$ located on the number line.

Solution Video

Accompanying lectures for questions 298 - 298

Question 298: Calculate. Show your work.

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

Solution Video

Accompanying lectures for questions 299 - 299

Question 299: Calculate. Show your work.

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

Solution Video

Question 300: Calculate.

$6.4 - 4.2 \times 1.5$

Solution Video

Accompanying lectures for questions 301 - 301

Question 301: Calculate.

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

Solution Video

Accompanying lectures for questions 302 - 303

Question 302: Calculate.

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

Solution Video

Question 303: Calculate.

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

Solution Video

Accompanying lectures for questions 304 - 307

Question 304: Calculate. Show your work.

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

Solution Video

Question 305: Calculate. Show your work.

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

Solution Video

Question 306: Calculate. Show your steps.

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

Solution Video

Accompanying lectures for questions 304 - 307

Question 307: Calculate. Show your steps.

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

Solution Video

Accompanying lectures for questions 308 - 308

Question 308: Calculate. Show your work.

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

Solution Video

Accompanying lectures for questions 309 - 309

Question 309: Calculate. Show your work.

$$-1\frac{1}{2} + \frac{-1}{-2} - \frac{-3}{5}$$

Solution Video

Accompanying lectures for questions 310 - 310

Question 310: 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.

Solution Video

Accompanying lectures for questions 311 - 311

Question 311: Use >, <, or = to make true statements. Explain how you know each statement is true.

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

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

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

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

Solution Video

Accompanying lectures for questions 312 - 312

Question 312: Find the area of the circle using $A = \pi r^2$ when given each radius

a) $r = 5.2cm$

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

c) $r = 8.9m$

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

Solution Video

Accompanying lectures for questions 313 - 315

Question 313: Evaluate each.

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

Solution Video

Question 314: Evaluate each.

$(2ab)^2$ when $a = -0.5, b = 1.2$

Solution Video

Question 315: Evaluate each.

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

Solution Video

Chapter 2 Exponents & Polynomials

2.1 Representing Powers Up to Degree 3

Accompanying lectures for questions 316 - 333

Question 316: Sketch models to represent each of the following algebraic expressions. The variables x and y do not represent the same number.

x^2

Solution Video

Question 317: Calculate the side length of a square with an area of $49cm^2$.

Solution Video

Question 318: Sketch models to represent each of the following algebraic expressions.

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

x^2

Solution Video

Question 319: Sketch models to represent each of the following algebraic expressions.

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

x^3

Solution Video

Question 320: Sketch models to represent each of the following algebraic expressions.

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

y

Solution Video

Question 321: Sketch models to represent each of the following algebraic expressions.

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

$(2y)^2$

Solution Video

Question 322: 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.

$144km^2$

Solution Video

Question 323: 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.

$75cm^2$

Solution Video

Question 324: 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.

$0.01m^2$

Solution Video

Question 325: Choose the expression that represents the indicated quantity:

Solution Video

Question 326: Choose the expression that represents the indicated quantity:

the length of the line

Solution Video

Question 327: Choose the expression that represents the indicated quantity:

the side length

Solution Video

Question 328: Choose the expression that represents the indicated quantity:
the area of the square face

Solution Video

Question 329: If the footprint of a square building has an area of $50m^2$, which is a bette estimate for the length of the front of the building: $7.2m$ or $7.7m$? Explain how you can answer this without using a calculator.

Solution Video

Question 330: 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?

Solution Video

Question 331: 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.

Solution Video

Question 332: 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.

Solution Video

Question 333: 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.

Solution Video

2.2 Multiplying and Dividing Powers

Accompanying lectures for questions 334 - 339

Question 334: Simplify

$(2^2)(2^3)$

Solution Video

Question 335: Simplify.

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

Solution Video

Question 336: Simplify.

$(5^7)(5^4)$

Solution Video

Question 337: Simplify.

$(5^6)(5^5)$

Solution Video

Question 338: Simplify.

$(5^4)(5^2)(5^5)$

Solution Video

Question 339: Simplify.

$(5^3)(5)(5^5)(5^2)$

Solution Video

Accompanying lectures for questions 340 - 344

Question 340: Simplify

$(x^4)(x^3)$

Solution Video

Question 341: Simplify.

$(m^4)(m^2)$

Solution Video

Question 342: Simplify.

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

Solution Video

Question 343: Simplify.

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

Solution Video

Question 344: Simplify.

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

Solution Video

Accompanying lectures for questions 345 - 349

Question 345: Simplify

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

Solution Video

Question 346: Simplify if possible, and then evaluate

$$\frac{(2^7)}{2^5}$$

Solution Video

Question 347: Simplify

$$\frac{5^7}{5^2}$$

Solution Video

Question 348: Simplify if possible, and then evaluate

$$\frac{2^8}{2^5}$$

Solution Video

Question 349: Simplify if possible, and then evaluate

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

Solution Video

Accompanying lectures for questions 350 - 354

Question 350: Simplify

$$\frac{y^6}{y^3}$$

Solution Video

Question 351: Simplify

$$\frac{m^4}{m^2}$$

Solution Video

Question 352: Simplify

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

Solution Video

Question 353: Simplify

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

Solution Video

Question 354: Simplify

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

Solution Video

Accompanying lectures for questions 355 - 356

Question 355: Simplify if possible, and then evaluate

$$\frac{(5^5)(3)(3^4)}{(3^3)(5^4)}$$

Solution Video

Question 356: Simplify if possible, and then evaluate

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

Solution Video

Accompanying lectures for questions 357 - 358

Question 357: Simplify, and then evaluate for $x = 2$ and $y = 5$

$$\frac{(x^4)(x^3)}{x^6}$$

Solution Video

Question 358: Simplify, and then evaluate for $x = 2$ and $y = 5$.

$$\frac{(y^6)(y^4)}{(y^8)(y)}$$

Solution Video

Accompanying lectures for questions 359 - 364

Question 359: Simplify, and then evaluate for $x = 2$ and $y = 5$

$$\frac{y^6x^4}{x^3y^3}$$

Solution Video

Question 360: Simplify

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

Solution Video

Question 361: Simplify

$$\frac{x^2y^4}{x^3y}$$

Solution Video

Question 362: Simplify, and then evaluate for $x = 2$ and $y = 5$.

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

Solution Video

Question 363: Simplify, and then evaluate for $x = 2$ and $y = 5$.

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

Solution Video

Question 364: Simplify, and then evaluate for $x = 2$ and $y = 5$.

$$\frac{6x^4y^6}{3x^3y^3}$$

Solution Video

Accompanying lectures for questions 365 - 372

Question 365: Simplify.

$(5^2)(5^8)$

Solution Video

Question 366: Create four different expressions involving exponents that simplify to 7^8

Solution Video

Question 367: Simplify if possible, and then evaluate

$$\frac{(4^5)(4^6)}{4^7}$$

Solution Video

Question 368: Simplify if possible, and then evaluate

$$\frac{(7^3)(3^2)(3^4)(7)}{(3^3)(7^2)}$$

Solution Video

Question 369: Simplify if possible, and then evaluate

$$\frac{(4.2^3)(4.2^5)}{4.2^7}$$

Solution Video

Question 370: 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?

Solution Video

Accompanying lectures for questions 365 - 372

Question 371: Complete the table to show the relationship between the metric units of length. Express each relationship as a power with base 10.

	$Millimetres$	$Centimetres$	$Metres$	$Kilometres$
$Millimetres$				
$Centimetres$				
$Metres$				
$Kilometres$				

Solution Video

Question 372:

- **a)** Evaluate $\frac{3^5}{3^5}$
- **b)** Simplify $\frac{3^5}{3^5}$ using the exponent principle for quotients.
- **c)** Use the meaning of the powers in $\frac{3^5}{3^5}$ 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.

Solution Video

Accompanying lectures for questions 373 - 376

Question 373: Simplify.

$k^2n^3 \times kn^4$

Solution Video

Question 374: Simplify.

$a^2b^2 \times a^3b$

Solution Video

Question 375: Multiply.

$\left(8r^3s^2t\right)\left(4s^3t\right)$

Solution Video

Question 376: Simplify.

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

Solution Video

Accompanying lectures for questions 377 - 378

Question 377: Simplify

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

Solution Video

Question 378: Simplify, and then evaluate for $x = 2$ and $y = 5$.

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

Solution Video

Accompanying lectures for questions 379 - 379

Question 379: Simplify, and then evaluate for $x = 2$ and $y = 5$.

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

Solution Video

Accompanying lectures for questions 380 - 381

Question 380: 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.

Solution Video

Question 381: 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?

Solution Video

Accompanying lectures for questions 382 - 383

Question 382: How many centimetres in 5 km.

Solution Video

Question 383: Determine the number of millimetres in 4 m.

Solution Video

2.3 Power of a Power

Accompanying lectures for questions 384 - 389

Question 384: Express each of the follow as a power withe a single exponent.

$(7^3)^5$

Solution Video

Question 385: Express each of the following as a power with a single exponent.
$(3^4)^2$

Solution Video

Question 386: Express each of the following as a power with a single exponent.
$(2^5)^3$

Solution Video

Accompanying lectures for questions 384 - 389

Question 387: Express each of the following as a power with a single exponent.
$(10^6)^6$

Solution Video

Question 388: Express each of the following as a power with a single exponent.
$(10^6)^6$

Solution Video

Question 389: Express each of the following as a power with a single exponent.
$(5^2)^4$

Solution Video

Accompanying lectures for questions 390 - 396

Question 390: Express each of the follow as a power withe a single exponent.

$(x^4)^6$

Solution Video

Question 391: Express each of the follow as a power withe a single exponent.

$(c^3)^2$

Solution Video

Question 392: Express each of the following as a power with a single exponent.
$(x^2)^3$

Solution Video

Question 393: Simplify

- **a)** $(y^3)^4$
- **b)** $(m^2)^3$

Solution Video

Question 394: Simplify

$(c^3)^3$

Solution Video

Question 395: Simplify

$(n^3)^4$

Solution Video

Question 396: Simplify and evaluate each. Use $a = 2$, $b = -1$, and $c = 4$.

$(b^3)^2$

Solution Video

Accompanying lectures for questions 397 - 407

Question 397: Express each of the following as a power with a prime base

16

Solution Video

Question 398: Express each of the following as a power with a prime base

4^3

Solution Video

Question 399: Express each of the following as a power with a prime base

9^4

Solution Video

Question 400: Express each of the following as a power with the base indicated.

(16^2) with a base of 4

Solution Video

Question 401: Express each of the following as a power with the base indicated.

16^2 with a base of 2

Solution Video

Question 402: Express each of the following as a power with the base indicated.

25^3 with a base of 5

Solution Video

Question 403: Express each of the following as a power with the base indicated.

27^3 with a base of 3

Solution Video

Question 404: Write each power in simplified form

4^5 as a power of 2

Solution Video

Question 405: Write each power in simplified form

9^6 as a power of 3

Solution Video

Question 406: Write each power in simplified form

27^4 as a power of 3

Solution Video

Question 407: Write each power in simplified form

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

Solution Video

Accompanying lectures for questions 408 - 408

Question 408: Simplify

$(3^4)(3^5)$

Solution Video

Accompanying lectures for questions 409 - 415

Question 409: Simplify

$$\frac{(2^3)^3}{2^4}$$

Solution Video

Question 410: Simplify

$$\frac{(2^5 \times 5^2)^2}{(2^4 \times 5)^2}$$

Solution Video

Question 411: Evaluate.

$$\frac{(2^3)^4}{(2^2)^5}$$

Solution Video

Question 412: Evaluate.

$$\frac{(5^3)^6}{(5^3)^5}$$

Solution Video

Question 413: Evaluate.

$$\frac{(6)(2^3)^3}{(2^2)^4}$$

Solution Video

Question 414: Evaluate.

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

Solution Video

Question 415: Evaluate.

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

Solution Video

Accompanying lectures for questions 416 - 417

Question 416: Simplify

$$\frac{(5^3 \times 5^2)^2}{(5^4 \times 5)^2}$$

Solution Video

Question 417: Simplify

$$\frac{(5^5 \times 5^2)^2}{(5^4 \times 5)^2}$$

Solution Video

Accompanying lectures for questions 418 - 419

Question 418: Simplify

$(5^4)^3(5^4)^3$

Solution Video

Question 419: Simplify

$(4^3 \times 3^2)^2(4^5 \times 3^2)^3$

Solution Video

Accompanying lectures for questions 420 - 420

Question 420: Simplify

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

Solution Video

Accompanying lectures for questions 421 - 423

Question 421: Simplify

$(v^2)^2(v)$

Solution Video

Question 422: Simplify

$(n^4)^3(n^2)^3$

Solution Video

Question 423: Simplify

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

Solution Video

Accompanying lectures for questions 424 - 429

Question 424: Simplify

$$\frac{(k^5)^3}{k^2}$$

Solution Video

Question 425: Simplify

$$\frac{(j^8)^2}{(j^5)^2}$$

Solution Video

Question 426: Simplify

$$\frac{(j^8)^2}{(j^5)^2}$$

Solution Video

Question 427: Simplify

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

Solution Video

Question 428: Simplify and evaluate each. Use $a = 2$, $b = -1$, and $c = 4$.

$$\frac{(c^2)^3}{c^5}$$

Solution Video

Question 429: Simplify and evaluate each.

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

Solution Video

Accompanying lectures for questions 430 - 430

Question 430: Simplify

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

Solution Video

Accompanying lectures for questions 431 - 432

Question 431: Simplify

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

Solution Video

Question 432: Simplify

$(3x^4y^2)^3$

Solution Video

Accompanying lectures for questions 433 - 433

Question 433: Simplify

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

Solution Video

Accompanying lectures for questions 434 - 434

Question 434: Simplify

$(3a^3)^2(3^3a^5b^2)^2$

Solution Video

Accompanying lectures for questions 435 - 436

Question 435: 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) $(-2^3)^2 - (-2^2)^3$

Solution Video

Question 436: Show that 3^{10} is the same as 9^5 using your understanding of exponents.

Solution Video

Accompanying lectures for questions 437 - 437

Question 437: The length of the side of a cube is 3^5. Express its surface area and volume using powers and simplify.

Solution Video

Accompanying lectures for questions 438 - 438

Question 438: Determine an expression for the area of the square drawn on the hypotenuse.

Solution Video

Accompanying lectures for questions 439 - 439

Question 439: Evaluate.

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

Solution Video

Accompanying lectures for questions 440 - 442

Question 440: Simplify and evaluate each. Use $a = 2$, $b = -1$, and $c = 4$.

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

Solution Video

Question 441: Simplify and evaluate each. Use $a = 2$, $b = -1$, and $c = 4$.

$$\frac{a^3b^3}{ab}$$

Solution Video

Question 442: Simplify and evaluate each.

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

Solution Video

Accompanying lectures for questions 443 - 446

Question 443: Determine the value of the exponent that makes each statement true.

$4^3 = 2^x$

Solution Video

Question 444: Determine the value of the exponent that makes each statement true.

$6^9 = 216^x$

Solution Video

Question 445: Determine the value of the exponent that makes each statement true.

$625^2 = 25^x$

Solution Video

Question 446: Determine the value of the exponent that makes each statement true.

$27^4 = 3^x$

Solution Video

Accompanying lectures for questions 447 - 447

Question 447: Find the missing value with an integer.

a) $2^8 = 4^{\bigcirc}$

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

Solution Video

Mid Chapter Review

Accompanying lectures for questions 448 - 448

Question 448: Express each of the following as a power with single exponent.

a) $(7^3)^5$

b) $(x^4)^6$

c) $(x^3)^2$

Solution Video

Accompanying lectures for questions 449 - 453

Question 449: Express each of the following as a power with a different base.

a) 16

b) 4^3

c) 9^4

Solution Video

Question 450: Express each of the following numbers with the base indicated:

32^3 with a base of 2

Solution Video

Question 451: Express each of the following numbers with the base indicated:

81^2 with a base of 9

Solution Video

Question 452: Express each of the following numbers with the base indicated:

81^2 with a base of 3

Solution Video

Question 453: Express each of the following numbers with the base indicated:

100^{15} with a base of 10

Solution Video

Accompanying lectures for questions 454 - 455

Question 454: Express each of the following as a power with a single exponent.

$(a)\ (3^4)^2$ $(c)\ (2^5)^3$ $(e)\ (x^2)^3$
$(b)\ (9^4)^3$ $(d)\ (10^6)^6$ $(f)\ (5^2)^4$

Solution Video

Question 455: Simplify

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

Solution Video

Accompanying lectures for questions 456 - 458

Question 456: Simplify.

$5^3 5^6$

Solution Video

Question 457: Simplify.

$7^3 2^6 7^2 2^5$

Solution Video

Question 458: Simplify.

$(3.1)^8 (3.1)^2$

Solution Video

Accompanying lectures for questions 459 - 459

Question 459: Simplify.

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

Solution Video

Accompanying lectures for questions 460 - 462

Question 460: Simplify.

$$\frac{5^6}{5^2}$$

Solution Video

Question 461: Simplify.

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

Solution Video

Question 462: Simplify.

$$\frac{(0.012)^3}{0.012}$$

Solution Video

Accompanying lectures for questions 463 - 464

Question 463: Simplify.

$$\frac{7^3 7^6}{7}$$

Solution Video

Question 464: Simplify.

$$\frac{7^3 2^6}{7^2 2^5}$$

Solution Video

Accompanying lectures for questions 465 - 465

Question 465: Simplify.

$(\frac{5}{7})^3(\frac{5}{7})^6$

Solution Video

Accompanying lectures for questions 466 - 469

Question 466: Simplify.

x^2x^6

Solution Video

Question 467: Simplify.

y^3y^6

Solution Video

Question 468: Simplify.

$2^3x^22^2x^5$

Solution Video

Question 469: Simplify.

$5^3y^3 5^3y^6$

Solution Video

Accompanying lectures for questions 470 - 471

Question 470: Simplify.

$$\frac{m^6}{m^5}$$

Solution Video

Question 471: Simplify.

$$\frac{4^4 m^6}{4m}$$

Solution Video

Accompanying lectures for questions 472 - 472

Question 472: Simplify.

$$\frac{n^3 n^2}{n}$$

Solution Video

Accompanying lectures for questions 473 - 473

Question 473: Simplify.

$ab^7a^3b^4$

Solution Video

Accompanying lectures for questions 474 - 475

Question 474: Simplify.

$$\frac{x^5y^6}{x^3y}$$

Solution Video

Question 475: Simplify.

$$\frac{6^3q^5q^2}{6q^4}$$

Solution Video

Accompanying lectures for questions 476 - 476

Question 476: The diameter of the Earth is about 1.3 X 104 km. The diameter of the Sun is about 1.4×10^6 km. About how many “Earths” could you line up along the Sun’s diameter?

Solution Video

Accompanying lectures for questions 477 - 478

Question 477: Simplify

$(4^3 \times 3^2)^2 \times (4^5 \times 3^2)^3$

Solution Video

Question 478: Simplify.

$(5^3)^5(5^4)^4$

Solution Video

Accompanying lectures for questions 479 - 479

Question 479: Simplify

$$\frac{(2^5 \times 5^2)^2}{(2^4 \times 5)^2}$$

Solution Video

Accompanying lectures for questions 480 - 480

Question 480: Simplify.

$(x^3)^4(x^5)^4$

Solution Video

Accompanying lectures for questions 481 - 481

Question 481: Simplify.

$(m^3)^4(2x^3)^7(m^3)^4(x^3)^7$

Solution Video

Accompanying lectures for questions 482 - 482

Question 482: Simplify.

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

Solution Video

Accompanying lectures for questions 483 - 483

Question 483: The length of the side of a cube is 3^5. Express its surface area (SA) and volume (V) using powers and simplify.

Solution Video

Accompanying lectures for questions 484 - 484

Question 484: Express the area of each triangle as a monomial.

Solution Video

2.4 Adding and Subtracting Polynomials

Question 485: Draw an algebra tile representation of each polynomial.

$2x^2 - x$

Solution Video

Question 486: Draw an algebra tile representation of each polynomial.

$x^2 + 3$

Solution Video

Question 487: Draw an algebra tile representation of each polynomial.

$2y - 2x + 2$

Solution Video

Question 488: Copy each equation. Identify the like terms in each and circle their coefficients.

$a)\quad 3x, 4y, -2x \quad b)\quad 6m, -1.5m, 4n, 3m^2$

Solution Video

Question 489: Write an algebraic expression for each algebra tile representation.

Solution Video

Question 490: Write an algebraic expression for each algebra tile representation.

Solution Video

Question 491: Write an algebraic expression for each algebra tile representation.

Solution Video

Question 492: Draw an algebra tile representation of each polynomial.

$x^2 + 3x$

Solution Video

Question 493: Draw an algebra tile representation of each polynomial.

$2x^2 - y^2$

Solution Video

Question 494: Draw an algebra tile representation of each polynomial.

$xy + 4x$

Solution Video

Question 495: Draw an algebra tile representation of each polynomial.

$3x^2 - 3x - 4$

Solution Video

Question 496: Write a simplified algebraic expression for each algebra tile representation.

Solution Video

Question 497: Write a simplified algebraic expression for each algebra tile representation.

Solution Video

Question 498: Write a simplified algebraic expression for each algebra tile representation.

Solution Video

Question 499: Write a simplified algebraic expression for each algebra tile representation.

Solution Video

Question 500: Write a simplified algebraic expression for each algebra tile representation.

Solution Video

Accompanying lectures for questions 501 - 501

Question 501: Simplify the following.

$2x + 3x$

Solution Video

Accompanying lectures for questions 502 - 509

Question 502: Simplify the following

$7y - 3y - x^2 + 4x^2$

Solution Video

Question 503: Simplify the following

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

Solution Video

Question 504: Simplify the following

$(3y^2 - 2y + 1) - (-5y^2 + 2y - 3)$

Solution Video

Question 505: Simplify the following

$2y - 3y - x^2 + 3x^2$

Solution Video

Question 506: Simplify the following

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

Solution Video

Question 507: Determine the polynomials that need to be added to each row of the table.

Initial Polynomial	Polynomial To Be Added	Final Polynomial
$-7xy + 4x$		$-7xy + 3x - 2$

Solution Video

Question 508: Determine the polynomials that need to be added to each row of the table.

Initial Polynomial	Polynomial To Be Added	Final Polynomial
$2x^2 - 3x - 4$		$-2x^2 + 3x - 6$

Solution Video

Question 509: Simplify.

$3xy + 5yz - 2xyz + 6xy - xyz$

Solution Video

Accompanying lectures for questions 510 - 514

Question 510: Simplify the following.

$3x - 2y + 4x$

Solution Video

Question 511: Copy each question. Identify the like terms in each and circle the coefficients.

$-2g, 3f, -5g$

Solution Video

Question 512: Simplify the following

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

Solution Video

Question 513: Simplify the following

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

Solution Video

Question 514: Simplify.

$2x + 3y + 4z - 4x + 3y - z$

Solution Video

Accompanying lectures for questions 515 - 518

Question 515: Simplify the following.

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

Solution Video

Question 516: Simplify the following.

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

Solution Video

Question 517: Simplify the following.

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

Solution Video

Question 518: Simplify.

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

Solution Video

Accompanying lectures for questions 519 - 519

Question 519: Copy each question. Identify the like terms in each and circle the coefficients.

$5x, -2.1y^3, -0.8y^3, 2y$

Solution Video

Accompanying lectures for questions 520 - 520

Question 520: Simplify the following

$3h + 1 + 2h + 5$

Solution Video

Accompanying lectures for questions 521 - 521

Question 521: Simplify the following

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

Solution Video

Accompanying lectures for questions 522 - 525

Question 522: Simplify the following

$(3x^2 - 4xy + 6y^2) + (6x^2 - 8xy - 3y^2)$

Solution Video

Question 523: Simplify the following

$(3x^2 - 4xy + 6y^2) - (6x^2 - 8xy - 3y^2)$

Solution Video

Question 524: Simplify.

$-(4ab - 3a) - (6ab - 4a) + (2ab + 6a)$

Solution Video

Question 525: Simplify.

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

Solution Video

Accompanying lectures for questions 526 - 528

Question 526: Determine the polynomials that need to be added to each row of the table.

Initial Polynomial	Polynomial To Be Added	Final Polynomial
$x^2 + 3x$		$-x^2 + 5x$

Solution Video

Question 527: Determine the polynomials that need to be added to each row of the table.

Initial Polynomial	Polynomial To Be Added	Final Polynomial
$2x^2y^2 - 4y^2$		$5x^2y^2 - 3y^2$

Solution Video

Question 528: Simplify.

$-4abc - 3ab - 6abc - 4ab$

Solution Video

Accompanying lectures for questions 529 - 529

Question 529: 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.

Solution Video

Accompanying lectures for questions 530 - 530

Question 530: 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.

Solution Video

Accompanying lectures for questions 531 - 531

Question 531: 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.

	$Elizabeth$	$Dragan$
Average Weekly Tips	$\$220/table$	$\$160/table$
Room and Board	$\$160/week$	$\$125/week$

Solution Video

Accompanying lectures for questions 532 - 532

Question 532: Simplify.

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

Solution Video

2.5 Multiplying a Polynomial by a Monomial

Accompanying lectures for questions 533 - 535

Question 533: State the factors and product represented in each model as an algebraic equation.

Solution Video

Question 534: State the factors and product represented in each model as an algebraic equation.

Solution Video

Question 535: What multiplication equation does each model represent?

Solution Video

Accompanying lectures for questions 536 - 543

Question 536: Expand.

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

Solution Video

Question 537: Expand using the tool or strategy of your choice.

$(3x + 5)(2x)$

Solution Video

Question 538: Expand.

$b^2(2b^3 - 4b + 1)$

Solution Video

Question 539: Expand.

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

Solution Video

Question 540: Expand.

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

Solution Video

Question 541: Find the missing value.

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

Solution Video

Question 542: Evaluate each statement for $p = 5$ once before you expand and once after you expand it.

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

Solution Video

Question 543: Expand.

$-3x(xy + yz)$

Solution Video

Accompanying lectures for questions 544 - 545

Question 544: Expand.

$-2(y^2 - y - 1)$

Solution Video

Question 545: Expand.

$2(-y^2 - y - 1)$

Solution Video

Accompanying lectures for questions 546 - 548

Question 546: Expand using the tool or strategy of your choice.

$2(3x+4)$

Solution Video

Question 547: Expand using the tool or strategy of your choice.

$4(5+x)$

Solution Video

Question 548: Evaluate each statement for $p=5$ once before you expand and once after you expand it.

$4(3p+2)$

Solution Video

Accompanying lectures for questions 549 - 551

Question 549: Expand using the tool or strategy of your choice.

$3x(x+2)$

Solution Video

Question 550: Find the missing value.

$\bigcirc(2x-10)=6x-30$

Solution Video

Question 551: Evaluate each statement for $p=5$ once before you expand and once after you expand it.

$3p(6-p)$

Solution Video

Accompanying lectures for questions 552 - 557

Question 552: Expand using the tool or strategy of your choice.

$x(2x+1)$

Solution Video

Question 553: What multiplication equation does each model represent?

Solution Video

Question 554: What multiplication equation does each model represent?

Solution Video

Question 555: Write simplified algebraic expressions for the perimeter, P, and area, A, of the following figures.

Solution Video

Question 556: Write simplified algebraic expressions for the perimeter, P, and area, A, of the following figures.

Solution Video

Question 557: Evaluate the perimeter and the area of the rectangle if $x = 4cm$

Solution Video

Accompanying lectures for questions 558 - 560

Question 558: Expand.

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

Solution Video

Question 559: Find the missing value.

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

Solution Video

Question 560: Evaluate each statement for $p = 5$ once before you expand and once after you expand it.

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

Solution Video

Accompanying lectures for questions 561 - 561

Question 561: Expand.

$-(x^2 - 3x + 7)$

Solution Video

Accompanying lectures for questions 562 - 561

Accompanying lectures for questions 562 - 563

Question 562: Expand.

$2x(y-3z)$

Solution Video

Question 563: Fill in the missing information to make the statements true.

$20x+15=5(\bigcirc+\bigcirc)$

Solution Video

Accompanying lectures for questions 564 - 565

Question 564: Fill in the missing information to make the statements true.

$5x^2 + 25x = 5(\bigcirc + \bigcirc)$

Solution Video

Question 565: Factor the following expressions fully.

$12x^2 - 6x$

Solution Video

Accompanying lectures for questions 566 - 566

Question 566: Fill in the missing information to make the statements true.

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

Solution Video

Accompanying lectures for questions 567 - 567

Question 567: These polynomials were expanded using the distributive principle. Which of the following is the equivalent factored form?

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

Solution Video

2.6 Simplifying Polynomial Expressions

Accompanying lectures for questions 568 - 577

Question 568: Simplify using the tool or strategy of your choice. Verify using a different tool or strategy.

$3(x-1)+2(2x+2)$

Solution Video

Question 569: Simplify.

$3(x-1)+2(2x+2)$

Solution Video

Question 570: Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

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

Solution Video

Question 571: Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

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

Solution Video

Question 572: Simplify each expression, and then evaluate for $a=3$.

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

Solution Video

Question 573: Simplify each expression, and then evaluate for $a=3$.

$15-2(a-5)$

Solution Video

Question 574: Simplify the following polynomial expressions.

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

Solution Video

Question 575: Expand and simplify.

$-1.25(3.1m+2.2)-2.15(1.2m-3.2)$

Solution Video

Question 576: Simplify

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

Solution Video

Question 577: Simplify the following.

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

Solution Video

Accompanying lectures for questions 578 - 578

Question 578: Simplify using the tool or strategy of your choice. Verify using a different tool or strategy.

$2(y^2 - 3) - 2(y^2 - 1)$

Solution Video

Accompanying lectures for questions 579 - 586

Question 579: Simplify.

$2(y^2 - 3) - 2(y^2 - 1)$

Solution Video

Question 580: Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

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

Solution Video

Question 581: Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

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

Solution Video

Question 582: Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

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

Solution Video

Question 583: Simplify the following polynomial expressions.

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

Solution Video

Question 584: Simplify the following polynomial expressions.

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

Solution Video

Question 585: Simplify the following polynomial expressions.

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

Solution Video

Question 586: Simplify the following.

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

Solution Video

Accompanying lectures for questions 587 - 587

Question 587: 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.

	$Adults$	$Children$
$At 9 a.m.$	20	25
Each Hour After 9 a.m. Until Closing	95	120

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

Solution Video

Accompanying lectures for questions 588 - 588

Question 588: Write an algebraic representation that corresponds to the algebra tile model shown. Simplify the expression using the strategy of your choice.

Solution Video

Accompanying lectures for questions 589 - 589

Question 589: Write an algebraic representation that corresponds to the algebra tile model shown. Simplify the expression using the strategy of your choice.

Solution Video

Accompanying lectures for questions 590 - 594

Question 590: Write an algebraic representation that corresponds to the algebra tile model shown. Simplify the expression using the strategy of your choice.

Solution Video

Question 591: Mary is making rectangular picture frames to the proportions shown.

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

Solution Video

Question 592: Mary is making rectangular picture frames to the proportions shown.

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

Solution Video

Accompanying lectures for questions 590 - 594

Question 593: Mary is making rectangular picture frames to the proportions shown.

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

Solution Video

Question 594: 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.

Solution Video

Accompanying lectures for questions 595 - 600

Question 595: Simplify the following expression using the tool or strategy of your choice. Verify using a different tool or strategy.

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

Solution Video

Question 596: Simplify the following polynomial expressions.

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

Solution Video

Question 597: Simplify the following polynomial expressions.

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

Solution Video

Question 598: Simplify the following polynomial expressions.

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

Solution Video

Question 599: Simplify the following polynomial expressions.

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

Solution Video

Question 600: Simplify the following.

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

Solution Video

Accompanying lectures for questions 601 - 602

Question 601: Simplify each expression, and then evaluate for $a = 3$.

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

Solution Video

Question 602: Simplify each expression, and then evaluate for $a = 3$.

$-(2a - a^3) - a^2$

Solution Video

Accompanying lectures for questions 603 - 604

Question 603: Expand and simplify.

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

Solution Video

Question 604: Expand and simplify.

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

Solution Video

Accompanying lectures for questions 605 - 605

Question 605: Mary is making rectangular picture frames to the proportions shown.

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

Solution Video

Accompanying lectures for questions 606 - 606

Question 606: Apply the distributive property to simplify the following.

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

Solution Video

Accompanying lectures for questions 607 - 607

Question 607: Apply the distributive property to simplify the following.

$(y+2)(y+1)$

Solution Video

Accompanying lectures for questions 608 - 608

Question 608: Apply the distributive property to simplify the following.

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

Solution Video

Accompanying lectures for questions 609 - 611

Question 609: Simplify

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

Solution Video

Question 610: Simplify

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

Solution Video

Question 611: Simplify

$(3x+5)(2x-4)+(x+1)(2x+5)$

Solution Video

Chapter Review of Polynomials

Accompanying lectures for questions 612 - 618

Question 612: Sketch models to represent each of the following algebraic expressions. The variables x and y are not equal.

y^2

Solution Video

Question 613: Sketch models to represent each of the following algebraic expressions. The variables x and y are not equal.

y^3

Solution Video

Question 614: Sketch models to represent each of the following algebraic expressions. The variables x and y are not equal.

$2x$

Solution Video

Question 615: Sketch models to represent each of the following algebraic expressions. The variables x and y are not equal.

$(2x)^2$

Solution Video

Question 616: Rob is finishing a floor with square tiles. Each tile has an area of $412cm^2$. Estimate the length of the side of each tile.

Solution Video

Question 617: 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?

Solution Video

Accompanying lectures for questions 612 - 618

Question 618: 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.

Solution Video

Accompanying lectures for questions 619 - 619

Question 619: Why do you get the same result for each of the following expressions? Show your work using Exponent Laws.

(a) $\frac{5^7}{5^4}$

(b) $\frac{5^6}{5^3}$

(c) $\frac{(5^4)(5^5)}{5^6}$

(d) $\frac{(5^4)(5)}{(5)(5)}$

Solution Video

Accompanying lectures for questions 620 - 620

Question 620: Simplify, and then evaluate for $x = -2$ and $y = 3$

$$\frac{(x^3)(x^4)}{x^6}$$

Solution Video

Accompanying lectures for questions 621 - 621

Question 621: Simplify, and then evaluate for $x = -2$ and $y = 3$

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

Solution Video

Accompanying lectures for questions 622 - 622

Question 622: Simplify, and then evaluate for $x = -2$ and $y = 3$

$$\frac{-32x^6}{16x^3}$$

Solution Video

Accompanying lectures for questions 623 - 623

Question 623: 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 $1.1 \times 10^9 km/h$.

Solution Video

Accompanying lectures for questions 624 - 624

Question 624: Simplify.

$(a^3)^2$

Solution Video

Accompanying lectures for questions 625 - 625

Question 625: Simplify.

$$\frac{(2^3y^4)^3}{(2^4y^3)^2}$$

Solution Video

Accompanying lectures for questions 626 - 626

Question 626: Which of the following is equal to 0?

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

Solution Video

Accompanying lectures for questions 627 - 629

Question 627: Express each of the following as a power with a prime base.

8^3

Solution Video

Question 628: Express each of the following as a power with a prime base.

25^4

Solution Video

Question 629: Express each of the following as a power with a prime base.

9^3

Solution Video

Accompanying lectures for questions 630 - 631

Question 630: Simplify.

$5y - 4y$

Solution Video

Question 631: Simplify.

$\frac{4}{5}a - \frac{1}{5}a$

Solution Video

Accompanying lectures for questions 632 - 632

Question 632: Simplify.

$3xy^2 + 3xy^2$

Solution Video

Accompanying lectures for questions 633 - 634

Question 633: Simplify.

$2x^2 - 5x + 5x^2 - x$

Solution Video

Question 634: Simplify.

$y^2 + 5xy + y^2 - xy$

Solution Video

Accompanying lectures for questions 635 - 635

Question 635: Simplify.

$$2\frac{1}{2}a + \frac{2}{3}b + \frac{1}{2}a - \frac{1}{3}b$$

Solution Video

Accompanying lectures for questions 636 - 636

Question 636: Simplify.

$-1.75m + 2.7 - 2.25m + 2.3$

Solution Video

Accompanying lectures for questions 637 - 637

Question 637: Expand. check one of your answer using a different tool or strategy.

$3(y-2)$

Solution Video

Accompanying lectures for questions 638 - 639

Question 638: Expand. check one of your answer using a different tool or strategy.

$x(2x+4)$

Solution Video

Question 639: Expand.

$-1.5m(2.8m+2.2)$

Solution Video

Accompanying lectures for questions 640 - 641

Question 640: Expand. check one of your answer using a different tool or strategy.

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

Solution Video

Question 641: Expand. check one of your answer using a different tool or strategy.

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

Solution Video

Accompanying lectures for questions 642 - 643

Question 642: Expand. check one of your answer using a different tool or strategy.

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

Solution Video

Question 643: Expand. check one of your answer using a different tool or strategy.

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

Solution Video

Accompanying lectures for questions 644 - 645

Question 644: Expand.

$$\frac{1}{3}(3x+12)$$

Solution Video

Question 645: Expand and simplify. Check one of your answers using a different tool or strategy.

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

Solution Video

Accompanying lectures for questions 646 - 649

Question 646: Expand.

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

Solution Video

Question 647: Expand and simplify.

$$\frac{1}{4}(8x - 12) - \frac{1}{2}(6 - 14x)$$

Solution Video

Question 648: Expand and simplify.

$$\frac{5}{6}(6x - 18y) + \frac{2}{3}(21x - 6y)$$

Solution Video

Question 649: Expand and simplify.

$$\frac{5}{6}(6x - 18y) + \frac{2}{3}(21x - 6y)$$

Solution Video

Accompanying lectures for questions 650 - 653

Question 650: 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).

Solution Video

Question 651: 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.

Solution Video

Question 652: 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.

Solution Video

Accompanying lectures for questions 650 - 653

Question 653: 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.

Solution Video

Accompanying lectures for questions 654 - 654

Question 654: Expand and simplify. Check one of your answers using a different tool or strategy.

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

Solution Video

Accompanying lectures for questions 655 - 656

Question 655: Expand and simplify. Check one of your answers using a different tool or strategy.

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

Solution Video

Question 656: Expand and simplify. Check one of your answers using a different tool or strategy.

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

Solution Video

Accompanying lectures for questions 657 - 658

Question 657: 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.

$CardType$	$NumberofCards$	$ValueToday$	$IncreaseinValueperYear$
$Rookiecards$	22	$\$15$	$\$3$
$Bigstarcards$	18	$\$12$	$\$2$

Solution Video

Question 658: 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.

$CardType$	$NumberofCards$	$ValueToday$	$IncreaseinValueperYear$
$Rookiecards$	22	$\$15$	$\$3$
$Bigstarcards$	18	$\$12$	$\$2$

Solution Video

Practice Test on Algebra and Powers

Accompanying lectures for questions 659 - 659

Question 659: 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

Solution Video

Accompanying lectures for questions 660 - 660

Question 660: 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.

Solution Video

Accompanying lectures for questions 661 - 661

Question 661: Determine the approximate length of the roadway bordering the adjacent square properties.

Solution Video

Accompanying lectures for questions 662 - 662

Question 662: Simplify

$3^4 3^6$

Solution Video

PrepBox

Accompanying lectures for questions 663 - 663

Question 663: Simplify

$$\frac{(\frac{4}{5})^6}{(\frac{4}{5})^5}$$

Solution Video

Accompanying lectures for questions 664 - 664

Question 664: Simplify

$$\frac{x^3x^6}{x}$$

Solution Video

Accompanying lectures for questions 665 - 665

Question 665: Simplify

$6.1(6.1^6)(6.1^5)(5^2)$

Solution Video

Accompanying lectures for questions 666 - 666

Question 666: Simplify

$(-7)^4(-7^6)$

Solution Video

Accompanying lectures for questions 667 - 667

Question 667: Simplify

a) $(6^3)^2$

b) $(x^2)^5$

Solution Video

Accompanying lectures for questions 668 - 668

Question 668: Simplify

$[(\frac{2}{5})^4]^5$

Solution Video

PrepBox

Accompanying lectures for questions 669 - 669

Question 669: Simplify

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

Solution Video

Accompanying lectures for questions 670 - 670

Question 670: Simplify

$$(\frac{2}{x^2})^2$$

Solution Video

Accompanying lectures for questions 671 - 671

Question 671: Simplify.

$5x - 2x$

Solution Video

Accompanying lectures for questions 672 - 672

Question 672: Simplify.

$7xy + 2xy$

Solution Video

Accompanying lectures for questions 673 - 673

Question 673: Simplify.

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

Solution Video

Accompanying lectures for questions 674 - 674

Question 674: Which expression below is equivalent to $(y^2 + 5y) - (3y^2 - y)$?

A $-2y^2 + 6y$

B $4y^2 + 4y$

C $2y^2 + 6y$

D $-2y^2 + 6y$

E none of the above

Solution Video

Accompanying lectures for questions 675 - 675

Question 675: Expand.

$2(x-3)$

Solution Video

Accompanying lectures for questions 676 - 676

Question 676: Expand.

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

Solution Video

Accompanying lectures for questions 677 - 677

Question 677: Expand.

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

Solution Video

Accompanying lectures for questions 678 - 680

Question 678: Expand and simplify.

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

Solution Video

Question 679: Expand and simplify.

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

Solution Video

Question 680: Expand and simplify.

$2x(3x-2)+x^2+0.2(x^2+3)$

Solution Video

Accompanying lectures for questions 681 - 681

Question 681: Mary and Bill are setting up a summer concession stand at the park. They need these jobs filled:

Position	Number of Positions	Hourly Pay Rate and Weekly Bonus
Manager	3	$14/h plus $50bonus per week for working at least 30 h*pe*
Server	8	$9/h plus $35bonus per week for working at least 30 h*per*

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.

Solution Video

Accompanying lectures for questions 682 - 682

Question 682: Determine an expression that simplifies to $3x^2$ if the expression contains:

- exactly two binomials
- the distributive property used once

Solution Video

Chapter 3 Linear Relations

3.1 Relations

Accompanying lectures for questions 683 - 685

Question 683: Describe a relation between the figure number and the total number of squares using a table of values, a graph, and an equation.

Solution Video

Question 684: Describe each relation with either a table of values or an equation.

Solution Video

Question 685: 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.

Solution Video

Accompanying lectures for questions 686 - 692

Question 686: 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 $\$2.50$

Solution Video

Question 687: Graph each relation.

$Time(min)$	$Distance(km)$
0	15
5	18
10	21
15	24

Solution Video

Question 688: Graph each relation.

$SideLength(\text{cm})$	$Area\ (\text{cm}^2)$
1	1
2	4
3	9
4	16

Solution Video

Question 689: Graph each relation.

x	y
-2	-4
-1	-2
0	0
1	2

Solution Video

Question 690: Describe each relation using an equation.

$Time(min)$	$Distance(km)$
0	15
5	18
10	21
15	24

Solution Video

Question 691: Describe each relation using an equation.

x	y
-2	-4
-1	-2
0	0
1	2

Solution Video

Question 692: Elyse is training for a race. The table shows her times and distances.

$Time(\text{min})$	$Distance(\text{km})$
0	0
10	2
20	4
30	6

- **(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)

Solution Video

Accompanying lectures for questions 693 - 693

Question 693: Describe each relation with either a table of values or an equation.

Solution Video

Accompanying lectures for questions 694 - 696

Question 694: The relation between Celsius and Fahrenheit is $C = \frac{5}{9}(F - 32)$.

- 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?

Solution Video

Question 695: 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.

Solution Video

Question 696: 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.

Solution Video

Accompanying lectures for questions 697 - 697

Question 697: 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?

Solution Video

Accompanying lectures for questions 698 - 699

Question 698: Is the point on the graph of $y = 5x$?

$(0, 0)$

Solution Video

Question 699: Is the point on the graph of $y = 5x$?

$(2, 10)$

Solution Video

Accompanying lectures for questions 700 - 705

Question 700: Represent each relation using a table of values and a graph.

$y = x$

Solution Video

Question 701: Represent each relation using a table of values and a graph.

$y = 2x + 3$

Solution Video

Question 702: Represent each relation using a table of values and a graph.

$y = -x + 1$

Solution Video

Question 703: Represent each relation using a table of values and a graph.

$y = 0.25x - 3.5$

Solution Video

Question 704: Represent each relation using a table of values and a graph.

$y = -\frac{1}{2}x$

Solution Video

Question 705: Represent each relation using a table of values and a graph.

$y = -\dfrac{2}{3}x + \dfrac{1}{6}$

Solution Video

Accompanying lectures for questions 706 - 706

Question 706: 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.

Solution Video

Accompanying lectures for questions 707 - 710

Question 707: Describe each relation in words.

$I = 2.54c$, where I is inches and c in centimetres

Solution Video

Question 708: Describe each relation in words.

$F = \frac{9}{5}C + 32$, where F is degrees Fahrenheit and C is degrees Celsius

Solution Video

Question 709: Describe each relation in words.

$k = \frac{p}{2.2}$, where p is pounds and k is kilograms

Solution Video

Question 710: Describe each relation in words.

$K = C + 273$, where K is degrees Kelvin and C is degrees Celsius

Solution Video

Accompanying lectures for questions 711 - 711

Question 711: **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?

Solution Video

3.2 Exploring Linear Relations

Accompanying lectures for questions 712 - 713

Question 712: 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) $y = -\frac{2}{3}x + \frac{1}{6}$

Solution Video

Question 713: 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?

Solution Video

Accompanying lectures for questions 714 - 714

Question 714: 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.

Solution Video

3.3 Investigating Properties of Linear Relations

Accompanying lectures for questions 715 - 722

Question 715: Which of these relations are linear? How do you know?

a)

x	y
1	3
2	6
3	9
4	12

b)

c)

x	y
1	1
2	4
3	9
4	16

d)

Solution Video

Question 716: Determine the rate of change.

x	y
1	3
2	6
3	9
4	12

Solution Video

Question 717: Determine the rate of change.

Solution Video

Question 718: Determine the rate of change.

x	y
1	1
2	4
3	9
4	16

Solution Video

Question 719: Determine the rate of change.

x	y
2	11
4	17
6	23
8	29
10	35

Solution Video

Question 720: Determine the rate of change.

x	y
5	0
4	2
3	4
2	6
1	8

Solution Video

Question 721: Determine the rate of change.

x	y
0	0
0.25	2
0.5	4
0.75	6
1	8

Solution Video

Question 722: Determine the rate of change.

x	y
1	-2
4	-8
5	-10
3	-6
2	-4

Solution Video

Accompanying lectures for questions 723 - 723

Question 723: Determine the rate of change.

Solution Video

Accompanying lectures for questions 724 - 723

Accompanying lectures for questions 724 - 725

Question 724: What is the slope of this roof?

Solution Video

Question 725: 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.

Solution Video

Accompanying lectures for questions 726 - 729

Question 726: Determine the slope of the line that passes through each pair of points.

- $(3, 3)$ and $(-2, 2)$

Solution Video

Question 727: Determine the slope of the line that passes through each pair of points.

- $(21, -10)$ and $(20, 24)$

Solution Video

Question 728: Determine the slope of the line that passes through each pair of points.

- $(1, -1)$ and $(2, 2)$

Solution Video

Question 729: Determine the slope of the line that passes through each pair of points.

- $(-3, -8)$ and $(-5, -6)$

Solution Video

Accompanying lectures for questions 730 - 730

Question 730: Determine the slope of the line that passes through each pair of points.

- $(4, 0)$ and $(6, 18)$

Solution Video

Accompanying lectures for questions 731 - 731

Question 731: Use the title and axis labels of each graph to tell what the y—intercept and slope mean in each case.

Solution Video

Accompanying lectures for questions 732 - 734

Question 732: Determine two more ordered pairs for each relation. Explain your reasoning.

rise is 2, run is 3; $(2, 5)$ lies on the line

Solution Video

Question 733: Determine two more ordered pairs for each relation. Explain your reasoning.

rise is -3, run is 4; $(0, -2)$ lies on the line

Solution Video

Question 734: Determine two more ordered pairs for each relation. Explain your reasoning.

rise is -2, run is 1; $(-2, -3)$ lies on the line.

Solution Video

Accompanying lectures for questions 735 - 737

Question 735: Determine two more ordered pairs for each relation. Explain your reasoning.

rise is 5, run is 1; $(1, -6)$ lies on the line

Solution Video

Question 736: Write a linear equation for each line.

- a line with a slope of 2 that passes through (4, 1)

Solution Video

Question 737: Write a linear equation for each line.

- a line with a slope of $-\frac{1}{2}$ that passes through (3, 0)

Solution Video

Accompanying lectures for questions 738 - 738

Question 738: **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.

$Altitude(\mathbf{km})$	$AirPressure(\mathbf{Pa})$
1	80000
3	60000
6	40000
16	20000
22	10000
30	5000

Solution Video

Accompanying lectures for questions 739 - 741

Question 739: Graph each relation and state the slope.

$y = 3x$

Solution Video

Question 740: Graph each relation and state the slope.

$y = -2x$

Solution Video

Question 741: Graph each relation and state the slope.

$y = -x$

Solution Video

Accompanying lectures for questions 742 - 744

Question 742: Graph each relation and state the slope.

$$y = \frac{3}{4}x + 1$$

Solution Video

Question 743: Graph each relation and state the slope.

$$y = -\frac{1}{5}x + 1$$

Solution Video

Question 744: Graph each relation and state the slope.

$$y = \frac{2}{3}x - 4$$

Solution Video

Accompanying lectures for questions 745 - 746

Question 745: An equation for a house's value is $y = 7500x + 125000$, 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?

Solution Video

Question 746: 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?

Solution Video

Accompanying lectures for questions 747 - 747

Question 747: 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.

Solution Video

Accompanying lectures for questions 748 - 749

Question 748: 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.

Solution Video

Question 749: 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.

Solution Video

Accompanying lectures for questions 750 - 752

Question 750: Write a linear equation for each line.

- a line with a y-intercept of 2 and a slope of $\frac{3}{5}$

Solution Video

Question 751: Write a linear equation for each line.

- a line with a y-intercept of 0 and a slope of -4

Solution Video

Question 752: Write a linear equation for each line.

- a line with a y-intercept of 2 and a slope of $\frac{3}{5}$

Solution Video

Accompanying lectures for questions 753 - 753

Question 753: Write a linear equation for each line.

- a line that passes through (0, 5) and (3, 6)

Solution Video

Mid Chapter Review on Linear Relations

3.4 Equivalent Linear Relations

Accompanying lectures for questions 754 - 766

Question 754: Graph the relation using the x and y-intercepts.

$-3x + 2y = 6$

Solution Video

Question 755: Graph each relation using the x and y-intercepts.

$\frac{1}{2}x + \frac{2}{3}y = \frac{1}{6}$

Solution Video

Question 756: Graph each relation using the x- and y-intercepts.

$y = 2x - 1$

Solution Video

Question 757: 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?

Solution Video

Question 758: Locate three points on the line $6x - y = 18$, where x and y are both integers, and draw the line.

Solution Video

Question 759: Graph each relation using the $x-$ and $y-$intercepts.

$2x - 5y = 10$

Solution Video

Question 760: Graph each relation using the $x-$ and $y-$intercepts.

$4x + 5y = 20$

Solution Video

Question 761: Graph each relation using the $x-$ and $y-$intercepts.

$x + y = 0$

Solution Video

Question 762: Graph the relation using the x- and y-intercepts and slope.

$2x + 3y = 0$

Solution Video

Question 763: Graph each relation using the x- and y-intercepts.

$$2x + \frac{4}{5}y = 11$$

Solution Video

Question 764: Graph each relation using the x-and y-intercepts.

$$\frac{1}{4}x - \frac{2}{3}y = 1$$

Solution Video

Question 765: Graph each relation using the x- and y - intercepts.

$$-\frac{5}{6}x + y = -\frac{1}{3}$$

Solution Video

Question 766: 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).

Solution Video

Accompanying lectures for questions 767 - 774

Question 767: 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.

Solution Video

Question 768: 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?

Solution Video

Question 769: 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.

Solution Video

Question 770: 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?

Solution Video

Question 771: 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.

Solution Video

Question 772: 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 $\$240$?

Solution Video

Question 773: Julia is preparing a mix of raisins and nuts for her brother's party. Chocolate raisins are $\$0.88/100g$ and peanuts are $\$1.00/100g$.

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.

Solution Video

Question 774: 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.

Solution Video

Accompanying lectures for questions 775 - 777

Question 775: Write each equation in $y = mx + b$ form.

$4x + 2y = 8$

Solution Video

Question 776: Write it in $y = mx + b$ form.

$x + y = 2$

Solution Video

Question 777: Write each equation in $y = mx + b$ form.

$3x - 4y + 1 = 0$

Solution Video

Accompanying lectures for questions 778 - 781

Question 778: Write the equation of each line in the form $Ax + By = C$.

$x-$intercept 4, $y-$intercept -2

Solution Video

Question 779: Write the equation of each line in the form $Ax + By = C$.

$x-$intercept $\frac{1}{2}$, $y-$intercept $\frac{3}{4}$

Solution Video

Question 780: Write the equation of each line in the form $Ax + By = C$.

$x-$intercept $\frac{1}{2}$, $y-$intercept -3

Solution Video

Accompanying lectures for questions 778 - 781

Question 781: Write the equation of each line in the form $Ax + By = C$.

$x-$intercept $\frac{2}{3}$, $y-$intercept 3

Solution Video

3.5 Linear and Nonlinear Relations

Accompanying lectures for questions 782 - 793

Question 782: Identify each relation as linear or nonlinear. Explain how you know.

Solution Video

Question 783: The area of a Circle of radius r is $A = \pi r^2$. Identify this relation as linear or nonlinear. Explain.

Solution Video

Question 784: Identify each relation as linear or nonlinear.

x	y
-3	9
-2	4
-1	1
0	0

Solution Video

Question 785: Identify each relation as linear or nonlinear.

x	y
5	1
6	2
7	3
8	4

Solution Video

Question 786: Identify each relation as linear or nonlinear.

x	y
1	0.25
2	0.50
3	0.75
4	1.00

Solution Video

Question 787: Johnny ran these distances while training for a marathon.

$Time(min)$	$DistanceRun(\mathbf{km})$
0	0
10	2
20	4
30	6

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.

Solution Video

Question 788: Identify the relation as linear or nonlinear. Explain your reasoning.

- the relation between the number of circles in each figure and the figure number

fig 1

fig 2

fig 3

S

fig 1

fig 2

fig 3

fig 4

Solution Video

Question 789: Identify the relation as linear or nonlinear. Explain your reasoning.

- the relation between the number of stars in each figure and the figure number

fig 1

fig 2

fig 3

S

fig 1

fig 2

fig 3

fig 4

Solution Video

Question 790: 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).

Solution Video

Accompanying lectures for questions 782 - 793

Question 791: 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

Solution Video

Question 792: 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.

Solution Video

Question 793: Calculate the first, second, and third differences for each relation. What is the connection between the degree of the equation and the differences?

$y = x^3$

Solution Video

Accompanying lectures for questions 794 - 794

Question 794: 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 $C = 0.006(R + 20)$, where R is the rainfall in millimetres and 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).

Solution Video

Linear Relations Chapter Review

Accompanying lectures for questions 795 - 819

Question 795: Write the equation of a line for the table below.

x	y
1	0
3	2
5	4

Solution Video

Question 796: Write the equation of a line for the table below.

x	y
-1	1
2	-2
5	-5

Solution Video

Question 797: Graph the line below.

$y = 2x + 4$

Solution Video

Question 798: Write the equation of a line.

Solution Video

Question 799: Write the equation of a line.

Solution Video

Question 800: Sketch the graph of $3x - 2y = 12$

Solution Video

Question 801: Identify each relation in question 1 as a direct or partial variation. Explain.

a)

x	y
1	0
3	2
5	4

b)

x	y
−1	1
2	−2
5	−5

c) $y = 2x + 4$

d)

e)

f) $3x - 2y = 12$

Solution Video

Question 802: Solve each relation below for $x = 7$.

a)

x	y
1	0
3	2
5	4

b)

x	y
−1	1
2	−2
5	−5

c) $y = 2x + 4$

d)

e)

f) $3x - 2y = 12$

Solution Video

Question 803: Calculate the slope of each line.

The rise is 4 and the run is 5.

Solution Video

Question 804: Calculate the slope of each line.

$\Delta y = 8$ when $\Delta x = 2$

Solution Video

Question 805: Calculate the slope of each line.

The change in x is 6 and the change in y is 10.

Solution Video

Question 806: Calculate the slope of each line.

The line passes through points (2, 7) and (6, -1)

Solution Video

Question 807: Calculate the slope of each line.

The first differences are -5 when the change in x is 1.

Solution Video

Question 808: 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.

Solution Video

Question 809: 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.

Solution Video

Question 810: Determine tow more ordered pairs that lie on each line.

The slope is $\frac{2}{3}$ and the y-intercept is (0, 5).

Solution Video

Question 811: Determine tow more ordered pairs that lie on each line.

The slope is $-\frac{3}{5}$ and the x-intercept is (3, 0).

Solution Video

Question 812: Determine tow more ordered pairs that lie on each line.

$\delta y = 5$, $\delta x = 2$, and (-1, -1) is on the line.

Solution Video

Question 813: Graph $y = \frac{2}{3}x - 4$

Solution Video

Question 814: Graph $3x - 6y = 12$

Solution Video

Question 815: 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.

Solution Video

Question 816: Is $x = 5$ the x-intercept of $2x - 3y = 10$? Explain how you know.

Solution Video

Question 817: Identify each relation as linear or nonlinear. Explain your reasoning.

a)

b) $y = 0.25x - 3$

c)

x	−3	−2	−1
y	2	3	4

d)

e) $y^2 = 4 - x^2$

f)

x	−3	−2	−1
y	27	8	1

Solution Video

Question 818: A ball is hit straight up into the air. The table shows its height at various times.

$Time(s)$	$Height(m)$
0	1
1	26
2	41
3	46
4	41
5	26
6	1

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.

Solution Video

Question 819: The table shows the value)1, in dollars, of a rate coin that is x years old.

x	y
0	0.25
10	750.25
20	1500.25
30	2250.25

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.

Solution Video

Chapter Test Solutions

Accompanying lectures for questions 820 - 820

Question 820: 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.

Solution Video

Accompanying lectures for questions 821 - 821

Question 821: 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.

Solution Video

Accompanying lectures for questions 822 - 822

Question 822: Is the following describe a

$Distance(m)$	0	4	8	12	16	20	24
$Time(s)$	0	1	2	3	4	5	6

- linear or non linear?
- direct or partial variation?

Solution Video

Accompanying lectures for questions 823 - 823

Question 823: What is the slope of the line between points $(0, 4)$ and $(3, -1)$?

Solution Video

Accompanying lectures for questions 824 - 824

Question 824: What is the rate of change of the stretch of a spring with a weight attached?

$Mass(g)$	1	2	3	4
$Stretch(cm)$	5	10	15	20

Solution Video

Accompanying lectures for questions 825 - 825

Question 825: 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.

Solution Video

Accompanying lectures for questions 826 - 827

Question 826: 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.

Solution Video

Question 827: 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.

Solution Video

Ch 1 to 3 Review - Rational, Polynomial, Lines

Accompanying lectures for questions 828 - 828

Question 828: Which expression do the tiles represent?

A. $(x^2 + 2x + 4) - (3x^2 - 3x + 1)$

B. $(x^2 + 2x + 4) - 3x^2 - 3x + 1$

C. $(-3x^2 + 3x + 1) + (x^2 + 2x + 4)$

D. $(-3x^2 - 3x - 1) + (x^2 + 2x + 4)$

Solution Video

Accompanying lectures for questions 829 - 829

Question 829: The area and length of a rectangle are shown. Determine the missing side.

Solution Video

Question 830: 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.

Which choice best represents the statements?

A. Only i) is true.

B. Only ii) is true.

C. Both 1) and ii) are true.

D. Both i) and iii) are true.

Solution Video

Chapter 4 Equations

4.1 Interpreting the Solution of Linear Equation

Accompanying lectures for questions 831 - 830

Accompanying lectures for questions 831 - 832

Question 831: Estimate the solution to $4.25x - 3 = 9.5$ using a table of values. Verify your solution.

Solution Video

Question 832: Solve for x.

$2.75x + 3.8 = 3.8$

Solution Video

Accompanying lectures for questions 833 - 834

Question 833: Estimate the solution to $-2 = 5 - \frac{1}{4}x$ using a graph. Verify your solution.

Solution Video

Question 834: Solve for the unknown.

$$-2 + \frac{1}{2}n = -5$$

Solution Video

Accompanying lectures for questions 835 - 835

Question 835: Solve the following using algebra.

a) $4.25x - 3 = 9.5$

b) $-2 = 5 - \frac{1}{4}x$

Solution Video

Accompanying lectures for questions 836 - 838

Question 836: Solve for x.

$2x + 9 = 4$

Solution Video

Question 837: Solve for x.

$2x - 8 = -9$

Solution Video

Question 838: Solve for the unknown.

$2x + 3 = 11$

Solution Video

Accompanying lectures for questions 839 - 838

Accompanying lectures for questions 839 - 840

Question 839: 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.

Solution Video

Question 840: 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?

Solution Video

Accompanying lectures for questions 841 - 840

Accompanying lectures for questions 841 - 844

Question 841: Solve for x.

$-3x - 11 = 7$

Solution Video

Question 842: Solve for x.

$35 - 2x = 13$

Solution Video

Question 843: Solve for x.

$7 - 3x = 16$

Solution Video

Question 844: Solve for the unknown.

$-17 = 3 - 4n$

Solution Video

Accompanying lectures for questions 845 - 847

Question 845: 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.

Solution Video

Question 846: 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.

Solution Video

Question 847: 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.

Solution Video

Question 848: 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.

Solution Video

Accompanying lectures for questions 849 - 851

Question 849: Use algebra to determine the x-intercept for each of the following:

$y = 4x + 8$

Solution Video

Question 850: Use algebra to determine the x-intercept for each of the following:

$y = \frac{1}{2}x - 5$

Solution Video

Question 851: Use algebra to determine the x-intercept for each of the following:

$y = x$

Solution Video

Accompanying lectures for questions 852 - 852

Question 852: Use algebra to determine the x-intercept for each of the following:

$y = -1$

Solution Video

Accompanying lectures for questions 853 - 853

Question 853: 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.

Solution Video

Accompanying lectures for questions 854 - 854

Question 854: Solve for x.

$$\frac{x+2}{5} - 3x = 7$$

Solution Video

Accompanying lectures for questions 855 - 855

Question 855: Solve for x.

$$\frac{1}{2}(x+2)-\frac{1}{3}(x-1)=4$$

Solution Video

Accompanying lectures for questions 856 - 858

Question 856: Solve for x.

$x^2 + 7 = 16$

Solution Video

Question 857: Solve for x.

$2x^2 - 3 = 11$

Solution Video

Question 858: Solve for x.

$3x^2 - 9 = 72$

Solution Video

Accompanying lectures for questions 859 - 859

Question 859: Given the linear relation $y = mx + b$, what equation would you solve to determine the x—intercept? Justify your answer.

Solution Video

4.2 Solving Linear Equations Using Inverse Operations

Accompanying lectures for questions 860 - 861

Question 860: List the inverse operations and the order in which you would apply them to isolate the variable in each equation.

$-3x + 2 = 15$

Solution Video

Question 861: List the inverse operations and the order in which you would apply them to isolate the variable in each equation.

$12.4x - 3.2 = 21.5$

Solution Video

Accompanying lectures for questions 862 - 868

Question 862: List the inverse operations and the order in which you would apply them to isolate the variable in each equation.

$\frac{x}{2} + 5 = 11$

Solution Video

Question 863: Solve each equation.

$\frac{x}{4} + 1 = 3$

Solution Video

Question 864: Solve each equation.

$\frac{x}{2} - 10 = 3$

Solution Video

Question 865: Solve each equation.

$$5 - \frac{y}{3} = 3$$

Solution Video

Question 866: Solve each equation.

$$10 + \frac{b}{5} = -1$$

Solution Video

Question 867: Solve each equation.

$$\frac{w}{3} + 5 = 1$$

Solution Video

Question 868: Solve each equation.

$$3 - \frac{d}{6} = -1$$

Solution Video

Accompanying lectures for questions 869 - 870

Question 869: Solve for the unknown.

$6b - 10 = -2$

Solution Video

Question 870: Solve for the unknown.

$3f - 4 = 10$

Solution Video

Accompanying lectures for questions 871 - 871

Question 871: Solve for the unknown.

$2.5c + 1.0 = 1.5$

Solution Video

Accompanying lectures for questions 872 - 873

Question 872: Solve for the unknown.

$6 - 2d = 4$

Solution Video

Question 873: Solve for the unknown.

$6 - 2e = 6$

Solution Video

Accompanying lectures for questions 874 - 874

Question 874: Solve for the unknown.

$-3 - h = -2$

Solution Video

Accompanying lectures for questions 875 - 875

Question 875: 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.

Solution Video

Accompanying lectures for questions 876 - 877

Question 876: A submarine is currently submerged at a depth of $600m$. It rises at a rate of $4m/s$.

(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.

Solution Video

Question 877: 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

Solution Video

Accompanying lectures for questions 878 - 878

Question 878: 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.

Solution Video

Accompanying lectures for questions 879 - 881

Question 879: Solve each equation.

$3(x+1)=12$

Solution Video

Question 880: Solve each equation.

$2(x-4)=4$

Solution Video

Question 881: Solve each equation.

$2x+3=4(1-x)+5$

Solution Video

Accompanying lectures for questions 882 - 883

Question 882: Solve each equation.

$\frac{w+3}{4} = 2$

Solution Video

Question 883: Solve each equation.

$\frac{y-5}{3} = 6$

Solution Video

Accompanying lectures for questions 884 - 884

Question 884: Solve each equation.

$\frac{2a+3}{3} = 5$

Solution Video

Accompanying lectures for questions 885 - 885

Question 885: Solve each equation.

$$-2 = \frac{-2c}{5} + 1$$

Solution Video

Accompanying lectures for questions 886 - 886

Question 886: 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.

$TableNumber$	$BillTotal(\$)$
1	137.70
2	68.85
3	160.65
4	91.80
5	91.80

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?

Solution Video

Accompanying lectures for questions 887 - 889

Question 887: The relationship between Celsius and Fahrenheit is represented by $C = \frac{5}{9}(F - 32)$

- Determine the Celsius temperature that is equivalent to 58^oF.

Solution Video

Question 888: The relationship between Celsius and Fahrenheit is represented by $C = \frac{5}{9}(F - 32)$

- List the operations you used to calculate the Celsius temperature.

Solution Video

Question 889: The relationship between Celsius and Fahrenheit is represented by $C = \frac{5}{9}(F - 32)$

- List the inverse operations you would use to isolate F.
- Determine the Fahrenheit temperature that is equivalent to 25^oC.

Solution Video

Accompanying lectures for questions 890 - 890

Question 890: Solve each equation.

$$\frac{1}{2}x - \frac{1}{4} = \frac{x}{3} + \frac{1}{6}$$

Solution Video

4.3 Equation-Solving Strategies

Accompanying lectures for questions 891 - 891

Question 891: Use inverse operations to solve $2x + 4 = 4x - 2$.

Solution Video

Accompanying lectures for questions 892 - 894

Question 892: To determine the dimensions of the rectangle with

- perimeter 44 cm and
- width 3 cm less than the length,

Florence drew a diagram:

Solution Video

Question 893: The perimeter of a rectangle is 36 cm. The width is 5 cm less than the length. Determine the dimensions of the rectangle.

Solution Video

Question 894: 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?

Solution Video

Accompanying lectures for questions 895 - 901

Question 895: Given solved equation below, explain the mathematical reasoning for each step.

$$\begin{array}{ccc} 2x+8 & = & 4x-18 \\ 2x+8-2x & = & 4x-18-2x \\ 8 & = & 2x-18 \\ 8 & = & 2x-18 \\ 8+18 & = & 2x-18+18 \\ 26 & = & 2x \\ \frac{26}{2} & = & x \end{array}$$

Solution Video

Question 896: Solve each equation. Verify each solution.

$5x+24=2x$

Solution Video

Question 897: Solve each equation. Verify each solution.

$2k=4k-15$

Solution Video

Question 898: Solve each equation. Verify each solution.

$-4x - 1 = -3x + 5$

Solution Video

Question 899: Solve each equation. Verify each solution.

$2x - 3x + 6 = 7 - x + 2$

Solution Video

Question 900: Solve each equation. Verify each solution.

$3b - 4 - 5b = -3b - 2$

Solution Video

Question 901: Solve each equation. Verify each solution.

$a + 2a + 3a - 6 = 7a - 6$

Solution Video

Accompanying lectures for questions 902 - 906

Question 902: Given each solved equation below, explain the mathematical reasoning for each step.

$$\begin{array}{rcl} \frac{1}{2}x + \frac{2}{3} & = & 5 \\ 6 \times (\frac{1}{2}x + \frac{2}{3}) & = & 5 \times 6 \\ 3x + 4 & = & 30 \\ 3x + 4 - 4 & = & 30 - 4 \\ 3x & = & 26 \\ \frac{3x}{3} & = & \frac{26}{3} \\ x & = & 8\frac{2}{3} \end{array}$$

Solution Video

Question 903: Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

$$\frac{x-5}{4} + 1 = \frac{1}{2}$$

Solution Video

Question 904: Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

$$-16 = \frac{x}{5} + \frac{x}{3}$$

Solution Video

Question 905: Solve each equation.

$\frac{x}{2} + \frac{x}{3} = 10$

Solution Video

Question 906: Solve each equation.

$\frac{c}{3} - \frac{c}{4} = 3$

Solution Video

Accompanying lectures for questions 907 - 908

Question 907: Explain why the equations in each group are equivalent equations.

$5x + 8 = 2(2x - 3), 5x + 8 = 4x - 6$, and $5x - 4x = -6 - 8$

Solution Video

Question 908: Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

$$-\frac{2}{5}(x - 8) = 4$$

Solution Video

Accompanying lectures for questions 909 - 910

Question 909: 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 $3x + 60 = 4$

Solution Video

Question 910: Explain why the equations in each group are equivalent equations.

$5x - 8 = 12$, $\frac{5x}{6} - \frac{4}{3} = 2$, and $\frac{5x}{6} - \frac{8}{6} = \frac{12}{6}$

Solution Video

Accompanying lectures for questions 911 - 911

Question 911: Solve $n + (n + 1) + (n + 2) = 54$

Solution Video

Accompanying lectures for questions 912 - 914

Question 912: Solve each equation. Verify each solution.

$3(x-5)=6$

Solution Video

Question 913: Solve each equation. Verify each solution.

$-5=5(3+2d)$

Solution Video

Question 914: Solve each equation. Verify each solution.

$-3(5-6m)=39$

Solution Video

Accompanying lectures for questions 915 - 917

Question 915: Solve each equation. Verify each solution.

$2(x-2)=3x-14$

Solution Video

Question 916: Solve each equation. Verify each solution.

$3(c+5)=4(1-2c)$

Solution Video

Question 917: Solve each equation. Verify each solution.

$4(x-2)=-3(3x+6)$

Solution Video

Accompanying lectures for questions 918 - 917

Accompanying lectures for questions 918 - 918

Question 918: 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.

Solution Video

Accompanying lectures for questions 919 - 920

Question 919: Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

$\frac{3x}{4} + \frac{2}{3} = 2$

Solution Video

Question 920: Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

$$\frac{1}{2} - \frac{x}{3} = \frac{1}{3}$$

Solution Video

Accompanying lectures for questions 921 - 921

Question 921: Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

$$\frac{2}{3} = 5 + x$$

Solution Video

Accompanying lectures for questions 922 - 922

Question 922: Find

- Common Denominator of All Terms
- Equation with Denominators Eliminated

$$\frac{y+2}{3} = \frac{1}{5}(2y+3)$$

Solution Video

Accompanying lectures for questions 923 - 923

Question 923: Solve each equation.

$\frac{x}{3} = 2$

Solution Video

Accompanying lectures for questions 924 - 924

Question 924: Solve each equation.

$\frac{d}{4} + 3 = 2$

Solution Video

Accompanying lectures for questions 925 - 925

Question 925: Solve each equation.

$\frac{3k}{5} - 6 = \frac{k}{3}$

Solution Video

Accompanying lectures for questions 926 - 926

Question 926: Solve each equation.

$\frac{2x+1}{3} = 5$

Solution Video

Accompanying lectures for questions 927 - 927

Question 927: The sum of one-half of a number, q and thee-fifths is two-thirds the number is q, Determine the number.

Solution Video

Accompanying lectures for questions 928 - 930

Question 928: 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?

Solution Video

Question 929: 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?

Solution Video

Question 930: 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?

Solution Video

Accompanying lectures for questions 931 - 932

Question 931: Show that the equation $2x - 3 = 4 + 2x$ has no solution. Explain.

Solution Video

Question 932: Show that the equation $\frac{10-6x}{2} = 5 - 3x$ has an infinite number of solutions. Why do you think this happens?

Solution Video

Accompanying lectures for questions 933 - 933

Question 933: 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?

	$No.of Quarters$	$No.of dimes$	$Value of Quarters$	$Value of Dimes$
$David$	q	$16 - q$	25q	
$Colin$	$\frac{9}{3}$			

Solution Video

Accompanying lectures for questions 934 - 934

Question 934: Determine the value of x in each diagram.

Solution Video

Accompanying lectures for questions 935 - 936

Question 935: Determine the value of x in each diagram.

Solution Video

Question 936: Determine the value of x in each diagram.

Solution Video

Accompanying lectures for questions 937 - 938

Question 937: Solve the equation

$3x^2 - 2 = 25$

Solution Video

Question 938: Solve the equation

$2(x+1)^2 - 1 = 71$

Solution Video

Accompanying lectures for questions 939 - 939

Question 939: 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.

Solution Video

Mid Chapter Review Algebra

Accompanying lectures for questions 940 - 940

Question 940: Use a graph to determine the solution to each equation.

a) $x + 2 = 7$

b) $4x - 4 = 8$

c) $-2x - 9 = -5$

d) $-7x - 14 = -14$

Solution Video

Accompanying lectures for questions 941 - 941

Question 941: 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.

Solution Video

Accompanying lectures for questions 942 - 942

Question 942: Solve using inverse operations.

$2x - 5 = 7$

Solution Video

Accompanying lectures for questions 943 - 944

Question 943: Solve using inverse operations.

$3x + 4 = 10$

Solution Video

Question 944: Solve using inverse operations.

$-6 = 3 + 3x$

Solution Video

Accompanying lectures for questions 945 - 946

Question 945: Solve using inverse operations.

$-2.1k + 5.6 = 20.2$

Solution Video

Question 946: Solve using inverse operations.

$-8.75z + 12.5 = 12.5$

Solution Video

Accompanying lectures for questions 947 - 947

Question 947: Solve using inverse operations.

$-a + 5 = 0$

Solution Video

Accompanying lectures for questions 948 - 948

Question 948: 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.

Solution Video

Accompanying lectures for questions 949 - 949

Question 949: Solve for x.

$-x + 6 = 2x - 12$

Solution Video

Accompanying lectures for questions 950 - 950

Question 950: Solve for x.

$$\frac{2}{3}x - 2 = 4x + \frac{4}{3}$$

Solution Video

Accompanying lectures for questions 951 - 952

Question 951: Solve for x.

$$4(x-8) = -2(x-5)$$

Solution Video

Question 952: Solve for x.

$$\frac{1}{5}(x+1) = \frac{1}{3}(2x-3)$$

Solution Video

Accompanying lectures for questions 953 - 954

Question 953: Solve for x.

$$\frac{2}{3}x - \frac{1}{2} = -\frac{1}{2} + \frac{1}{4}x$$

Solution Video

Question 954: Solve for x.

$$\frac{4x-2}{5} + \frac{1}{2} = \frac{3x+7}{2} - 1$$

Solution Video

Accompanying lectures for questions 955 - 955

Question 955: Solve

$$\frac{k}{3} + 1 = 4$$

Solution Video

Accompanying lectures for questions 956 - 958

Question 956: For each equation, write an equivalent equation multiply both sides by a constant to eliminate fraction expression then solve.

$$\frac{x}{2} - 3 = 1\frac{1}{6}$$

Solution Video

Question 957: For each equation, write an equivalent equation multiply both sides by a constant to eliminate fraction expression then solve.

$$-1\frac{2}{3}g + \frac{7}{9} = 0$$

Solution Video

Question 958: For each equation, write an equivalent equation multiply both sides by a constant to eliminate fraction expression then solve.

$$\frac{2}{3}h + \frac{1}{4} = 3\frac{1}{2}$$

Solution Video

Accompanying lectures for questions 959 - 959

Question 959: 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.

Solution Video

Accompanying lectures for questions 960 - 960

Question 960: Solve for x.

Solution Video

Accompanying lectures for questions 961 - 961

Question 961: Tom has 117 quarters and dimes worth a total of $\$15.75$. How many of each coin does he have?

Solution Video

4.4 Solving for a Variable in a Linear Relations

Accompanying lectures for questions 962 - 977

Question 962: Solve for the variable indicated.

$3x + y = 5$, solve for x.

Solution Video

Question 963: Solve for the variable indicated.

$2x + 5y = -10$; solve for y.

Solution Video

Question 964: Solve for y in terms of x.

$2y = 8 - 4x$

Solution Video

Question 965: Solve for y in terms of x.

$$-2x - 3y = 12$$

Solution Video

Question 966: Solve for y in terms of x.

$$2.8x + 1.1y - 5.3 = 0$$

Solution Video

Question 967: Solve for y in terms of x.

$$\frac{7}{5}y + \frac{2}{3}x = \frac{11}{13}$$

Solution Video

Question 968: Solve for y in terms of x.

$$\frac{4}{5} = \frac{2}{3}x + 1\frac{1}{2}y$$

Solution Video

Question 969: Solve for y in terms of x.

$$3(y-2) + 2x = 8$$

Solution Video

Question 970: Start with the relation $2x - 5y = 20$

Solve for y in terms of x.

Solution Video

Question 971: Start with the relation $2x - 5y = 20$

Graph this relation using x as the independent variable.

Solution Video

Question 972: Start with the relation $2x - 5y = 20$

State the slope and the intercepts of the graph.

Solution Video

Question 973: Start with the relation $2x - 5y = 20$

Solve for x in terms of y.

Solution Video

Question 974: Start with the relation $2x - 5y = 20$

Graph the relation using y as the independent variable.

Solution Video

Question 975: Solve the relation or formula for the variable indicated:

$2a - 5b = 12$; solve for a

Solution Video

Question 976: Solve the relation or formula for the variable indicated:

$0.35m + 2.4n = 9$; solve for n

Solution Video

Question 977: Solve the relation or formula for the variable indicated:

$\frac{1}{2}p - \frac{2}{3}q = \frac{1}{4}$; solve for p

Solution Video

Accompanying lectures for questions 978 - 980

Question 978: 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 $b = 2a + 4$

Solution Video

Question 979: 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 $x - 2y + 6 = 0$

Solution Video

Question 980: 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 $3n - 4m = 2$

Solution Video

Accompanying lectures for questions 981 - 981

Question 981: 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.

Solution Video

Accompanying lectures for questions 982 - 982

Question 982: 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.

Solution Video

Accompanying lectures for questions 983 - 985

Question 983: 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.

Solution Video

Question 984: Start with the relation $2x - 5y = 20$

State the slope and intercepts of the graph.

Solution Video

Question 985: Start with the relation $2x - 5y = 20$

Compare the slope of the two graphs. Justify your comparison.

Solution Video

Accompanying lectures for questions 986 - 986

Question 986: 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?

Solution Video

Accompanying lectures for questions 987 - 989

Question 987: Solve the relation or formula for the variable indicated:

$I = prt$; solve for r

Solution Video

Question 988: Solve the relation or formula for the variable indicated:

$C = 2\pi r$; solve for r.

Solution Video

Question 989: Determine the height of the triangle if the area is $55cm^2$ and the base is 4 cm using $A = \frac{1}{2}bh$
.

Solution Video

Accompanying lectures for questions 990 - 990

Question 990: Solve the relation or formula for the variable indicated:

$P = 2L + 2W$; solve for L

Solution Video

Accompanying lectures for questions 991 - 994

Question 991: 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.

Solution Video

Question 992: 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.

Solution Video

Question 993: 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.

Solution Video

Question 994: 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.

Solution Video

Accompanying lectures for questions 995 - 998

Question 995: 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?

Solution Video

Question 996: 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.

Solution Video

Question 997: When you multiply a number, x, by k, add n, and then divide by r, the answer is w.

The equivalent equation is

$$\frac{xk+n}{r}=w$$

Solve the relation for x.

Solution Video

Accompanying lectures for questions 995 - 998

Question 998: When you multiply a number, x, by k, add n, and then divide by r, the answer is w.

The equivalent equation is

$$\frac{xk+n}{r}=w$$

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?

Solution Video

Accompanying lectures for questions 999 - 999

Question 999: When you multiply a number, x, by k, add n, and then divide by r, the answer is w.

$$\frac{xk+n}{r}=w$$

- List the inverse operations that you would use, in the correct order, to isolate x.

Solution Video

Accompanying lectures for questions 1000 - 1002

Question 1000: Solve for x.

$$\frac{5}{x} + 2y = 9$$

Solution Video

Question 1001: Solve for x.

$$3x^2 + 50 = 197$$

Solution Video

Question 1002: Solve for x.

$$(x-4)^2 - 12 = 24$$

Solution Video

Accompanying lectures for questions 1003 - 1003

Question 1003: Solve for x.

$$\frac{3+y}{x} = -4$$

Solution Video

Accompanying lectures for questions 1004 - 1004

Question 1004: Solve for x.

$\sqrt{x+1} = 9$

Solution Video

Accompanying lectures for questions 1005 - 1005

Question 1005: Solve for x.

$2 - 8x^3 = 3$

Solution Video

Accompanying lectures for questions 1006 - 1008

Question 1006: The formula for determining the surface area of a cylinder is $SA = 2\pi r^2 + 2\pi rh$.

Solve for h in terms of SA and r.

Solution Video

Question 1007: The formula for determining the surface area of a cylinder is $SA = 2\pi r^2 + 2\pi rh$.

Determine the height of a cylinder with radius 5 cm and surface area 300 cm^2.

Solution Video

Question 1008: The formula for determining the surface area of a cylinder is $SA = 2\pi r^2 + 2\pi rh$.

Solve for r in terms of the other variables.

Solution Video

4.5 Solving a Linear System Graphically

Accompanying lectures for questions 1009 - 1018

Question 1009: Determine the point of intersection for system of linear equations shown below.

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

Solution Video

Question 1010: Determine the point of intersection for system of linear equations shown below.

$y = x + 1$ and $y = 4x - 5$

Solution Video

Question 1011: Determine the point of intersection for system of linear equations shown below.

$y = 2x - 1$ and $y = -x + 3$

Solution Video

Question 1012: Determine the point of intersection for system of linear equations shown below.

$y = x$ and $y = -x$

Solution Video

Question 1013: Does each pair of lines intersect at the given point?

$(2, 3)$: $y = x + 1$, $y = 4x - 5$

Solution Video

Question 1014: Does each pair of lines intersect at the given point?

$(0, 2)$: $y = 3x + 2$, $y = 5x - 1$

Solution Video

Question 1015: Does each pair of lines intersect at the given point?

$(-1, -3)$: $y = 4x + 1$, $y = x - 5$

Solution Video

Question 1016: Given the lines $y = 2$ and $y = 4x + 9$,

- Determine the point of intersection using a graph.

Solution Video

Question 1017: 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.

Solution Video

Question 1018: 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?

Solution Video

Accompanying lectures for questions 1019 - 1020

Question 1019: 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?

Solution Video

Question 1020: 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?

Solution Video

Accompanying lectures for questions 1021 - 1032

Question 1021: Determine the point of intersection of each pair of lines.

$y = -3x - 2$ and $2x + 3y = 5$

Solution Video

Question 1022: Determine the point of intersection of each pair of lines.

$2x + 4y = 7$ and $-x + 0.75y = 5$

Solution Video

Question 1023: Determine the point of intersection of each pair of lines.

$0.25x - 0.5y = 1$ and $3.25x + 4y = 22.5$

Solution Video

Question 1024: Determine the point of intersection of each pair of lines.

$y = 3x + 6$ and $1 = 3x - y$

Solution Video

Question 1025: Determine the point of intersection of each pair of lines:

$y - x = 9$ and $x - \frac{1}{6}y = -\frac{2}{3}$

Solution Video

Question 1026: Determine the point of intersection of each pair of lines:

$2x - y = 0$ and $y = 5 + 2x$

Solution Video

Question 1027: Determine the point of intersection of each pair of lines:

$5x + 8y - 12 = 0$ and $-5x + 16y - 12 = 0$

Solution Video

Question 1028: Determine the point of intersection of each pair of lines:

$4x + y - 2 = 0$ and $8x + 2y - 4 = 0$

Solution Video

Question 1029: Determine the point of intersection of each pair of lines:

$\frac{1}{3}x - \frac{2}{5}y + \frac{1}{4} = 0$ and $2x - \frac{1}{7}y + \frac{1}{2} = 0$

Solution Video

Question 1030: Determine the point of intersection of each pair of lines:

$5x - 2.5y = 10$ and $3.1x + 4y = 6.2$

Solution Video

Question 1031: Given the relation $x + y = 5$, determine a second relation that:

- intersects $x + y = 5$ at (2, 3)
- $does\ not$ intersect $x + y = 5$

Solution Video

Question 1032: Given the relation $x + y = 5$, determine a second relation that:

- $does\ not$ intersect $x + y = 5$

Solution Video

Accompanying lectures for questions 1033 - 1033

Question 1033: 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.

Solution Video

Accompanying lectures for questions 1034 - 1034

Question 1034: Mike has $\$9.85$ in dimes and quarters. If there are 58 coins altogether, how many dimes and how many quarters does Mike have?

Solution Video

Accompanying lectures for questions 1035 - 1035

Question 1035: Does each pair of lines intersect at the given point?

$(1, -1)$: $y = 5x - 4$, $y = 2x - 3$

Solution Video

Accompanying lectures for questions 1036 - 1036

Question 1036: Determine the point of intersection of each pair of lines:

$y = 2$ and $y = 5$

Solution Video

Accompanying lectures for questions 1037 - 1037

Question 1037: Determine the point of intersection of each pair of lines:

$y = -4$ and $x = 1$

Solution Video

Accompanying lectures for questions 1038 - 1038

Question 1038: Why does a system of two linear equations usually have only one solution for each of the two variables?

Solution Video

Accompanying lectures for questions 1039 - 1039

Question 1039: **(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.

Solution Video

Linear Algebra Chapter Review

Question 1040: Write the linear system that corresponds to each equation.

$4x - 5 = 3$

Solution Video

Accompanying lectures for questions 1041 - 1042

Question 1041: Write the linear system that corresponds to each equation.

$\frac{1}{2}x + 3 = 5$

Solution Video

Question 1042: Solve each of the following systems of equations using a graph.

- $3x - 4y = -12$ and $2x - 3y = 64$

Solution Video

Accompanying lectures for questions 1043 - 1043

Question 1043: Write the linear system that corresponds to each equation.

$-2(x-3)=-4$

Solution Video

Accompanying lectures for questions 1044 - 1044

Question 1044: Write the linear system that corresponds to each equation.

$\frac{1}{4}(x + \frac{2}{5}) = 0$

Solution Video

Accompanying lectures for questions 1045 - 1046

Question 1045: Solve each equation using algebra.

$3x + 6 = 12$

Solution Video

Question 1046: Solve each equation using algebra.

$4x - 8 = 12$

Solution Video

Accompanying lectures for questions 1047 - 1048

Question 1047: Solve each equation using algebra.

$5 - 2x = 11$

Solution Video

Question 1048: Solve each equation using algebra.

$-6x + 8 = -10$

Solution Video

Accompanying lectures for questions 1049 - 1050

Question 1049: Determine the x-intercept of each of the following.

$y = -5x + 20$

Solution Video

Question 1050: Determine the x-intercept of each of the following.

$2x + y = 10$

Solution Video

Accompanying lectures for questions 1051 - 1051

Question 1051: 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.

Solution Video

Accompanying lectures for questions 1052 - 1054

Question 1052: 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. $R = 15n - 150$

- Graph the linear relation.

Solution Video

Question 1053: For formula $C = \frac{5}{9}(F - 32)$ is used to convert Fahrenheit temperatures to Celsius.

Determine the Celsius temperature when $F = 90$

Solution Video

Question 1054: For formula $C = \frac{5}{9}(F - 32)$ is used to convert Fahrenheit temperatures to Celsius.

Determine the Fahrenheit temperature when $C = 25$.

Solution Video

Accompanying lectures for questions 1055 - 1058

Question 1055: 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. $R = 15n - 150$ 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.

Solution Video

Question 1056: 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.

$R = 15n - 150$

Solution Video

Question 1057: 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?

Solution Video

Accompanying lectures for questions 1055 - 1058

Question 1058: 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 $Cost = 15.95x - 159.5$

- Erin receives her first order of CDs with a bill for $\$31.90$. Create and solve an equation to determine how many she ordered.

Solution Video

Accompanying lectures for questions 1059 - 1059

Question 1059: 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.

Solution Video

Accompanying lectures for questions 1060 - 1060

Question 1060: Solve the equation.

$9x + 2 = 11x - 10$

Solution Video

Accompanying lectures for questions 1061 - 1062

Question 1061: Solve the equation.

$-\frac{4}{5}x + \frac{2}{3} = 1\frac{3}{4}x + 2$

Solution Video

Question 1062: Solve the equation.

$$\frac{(4+x)}{3} + 4 = \frac{x-6}{2} - 6$$

Solution Video

Accompanying lectures for questions 1063 - 1064

Question 1063: Solve the equation.

$-3(x+1)-2=4x-5(x-3)$

Solution Video

Question 1064: Is $x=3$ the solution to $5(3x-2)=4-10(x+1)$? Explain how you know.

Solution Video

Accompanying lectures for questions 1065 - 1065

Question 1065: Determine the length of each base for the trapezoids below if they have the same area.

Solution Video

Accompanying lectures for questions 1066 - 1066

Question 1066: Solve each equation for the variable indicated.

$P = 2l + 2w; l$

Solution Video

Accompanying lectures for questions 1067 - 1067

Question 1067: Solve each equation for the variable indicated.

$A = P + Prt; t$

Solution Video

Accompanying lectures for questions 1068 - 1068

Question 1068: Solve each equation for the variable indicated.

$V = \pi r^2 h; h$

Solution Video

Accompanying lectures for questions 1069 - 1069

Question 1069: Solve each equation for the variable indicated.

$Ax + By = C; y$

Solution Video

Accompanying lectures for questions 1070 - 1070

Question 1070: For formula $C = \frac{5}{9}(F - 32)$ is used to convert Fahrenheit temperatures to Celsius.

Solve for F in terms of C.

Solution Video

Accompanying lectures for questions 1071 - 1074

Question 1071: Solve for y in terms of x.

$8x - 4y = 12$

Solution Video

Question 1072: Solve for y in terms of x.

$5x = 10y - 20$

Solution Video

Question 1073: Solve for y in terms of x.

$3x - 3y - 9 = 0$

Solution Video

Question 1074: Solve for y in terms of x.

$\frac{x}{4} + \frac{y}{2} = 2$

Solution Video

Accompanying lectures for questions 1075 - 1078

Question 1075: 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..

Solution Video

Question 1076: Jose has $\$32.00$ in loonies and toonies.

- Write an equation to express the number of toonies in terms of the number of loonies.

Solution Video

Question 1077: 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.

Solution Video

Question 1078: Jose has $\$32.00$ in loonies and toonies.

- Is it possible that Jose has 13 toonies and 5 loonies? Explain.

Solution Video

Accompanying lectures for questions 1079 - 1080

Question 1079: Solve the equation $4 = -2x - 3$ byl 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.

Solution Video

Question 1080: Solve the equation $4 = -2x - 3$ byl 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 $3x - 4 = 2x + 3$?

Solution Video

Accompanying lectures for questions 1081 - 1082

Question 1081: 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?

Solution Video

Question 1082: 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?

Solution Video

Practice Test

Accompanying lectures for questions 1083 - 1083

Question 1083: a) Explain how each of the following illustrates a valid approach to solving the equation $3.50x + 2.70 = 6.55$

b) Which method leads to an exact solution?

Table of Values	Graph	Solve an Equation
x | $3.50x + 2.70$ 0.0 | 2.70 0.2 | 3.40 0.4 | 4.10 0.6 | 4.80 0.8 | 5.50 1.0 | 6.20 1.2 | 6.90 1.4 | 7.60 1.6 | 8.30 1.8 | 9.00 2.0 | 9.70 The solution is between 1.0 and 1.2.	$y = 3.50x + 2.70$ The solution is $x \doteq 1.1$.	$3.50x + 2.70 = 6.55$ $3.50x + 2.70 - 2.70 = 6.55 - 2.70$ $3.5x = 3.85$ $3.5x \div 3.5 = 3.85x \div 3.5$ $x = 1.1$ The solution is $x = 1.1$.

Solution Video

Accompanying lectures for questions 1084 - 1085

Question 1084: Solve and verify each equation.

$-2a + 5 = 3$

Solution Video

Question 1085: Solve and verify each equation.

$4 - 2x = 8$

Solution Video

Accompanying lectures for questions 1086 - 1086

Question 1086: Solve and verify each equation.

$$\frac{5}{6}x - \frac{3}{4} = \frac{1}{4}$$

Solution Video

Accompanying lectures for questions 1087 - 1087

Question 1087: Solve and verify each equation.

$3(x-1)+2(3x+1)=2$

Solution Video

Accompanying lectures for questions 1088 - 1089

Question 1088: Rearrange each equation to solve for the variable indicated.

$-3x + 2y = 6$; solve for y

Solution Video

Question 1089: Rearrange each equation to solve for the variable indicated.

$y = 3x + 2$; solve for x.

Solution Video

Accompanying lectures for questions 1090 - 1091

Question 1090: David has two part-time jobs. He earns $\$14/\mathrm{h}$ at one and $\$11/\mathrm{h}$ at the other. David wants to know how many hours it will take him to earn $\$1000$

a) Find two combinations of the numbers of hours David could work at each job to earn $\$1000$.

b) Graph the relation.

Solution Video

Question 1091: Justin charges $\$21$ per linear foot to install a wood fence. It costs him $\$19$ per linear foot plus $\$4000$ to purchase materials and hire installers each month. How many linear feet of fencing would he need to install each month to break even?

Solution Video

Accompanying lectures for questions 1092 - 1092

Question 1092: Determine the point of intersection for each system of linear equations.

$y = 7x - 9$ and $y = -x - 1$

Solution Video

Accompanying lectures for questions 1093 - 1093

Question 1093: Determine the point of intersection for each system of linear equations.

$-x - 2y = -3$ and $3x + y = -2$

Solution Video

Chapter 5 Lines in Coordinate System

5.1 Exploring the Equation of a Line

Accompanying lectures for questions 1094 - 1095

Question 1094: Match each linear equation with the graph that best represents it.

$$\begin{array}{llllll} a) & y=-3x+5 & c) & y=\frac{5}{8}x & e) & x=5 \\ b) & y=7x-4 & d) & y=-\frac{1}{4}x-4 & f) & y=3 \end{array}$$

Solution Video

Question 1095: Consider the lines formed by each of the following equations.

$$\begin{array}{llll} a) & y=-2x+8 & b) & y=\frac{1}{3}x+1 \\ & y=-\frac{15}{2}x+3 & & y=3x-9 \\ & y=-\frac{1}{2}x-7 & & y=x+5 \end{array}$$

- 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).

Solution Video

Accompanying lectures for questions 1096 - 1096

Question 1096: **a)** What linear equation represents the x-axis?

b) What linear equation represents the y-axis?

Solution Video

5.2 Different Forms of the Equation of a Line

Accompanying lectures for questions 1097 - 1102

Question 1097: Express the equation $5x + 6y + 15 = 0$ in the form $y = mx + b$.

Solution Video

Question 1098: Express each of the following equations in the form $y = mx + b$. Then, state the slope and y-intercept of each line.

$8x + 5y = 0$

Solution Video

Question 1099: The dependent variable is d in each of the following equations. Isolate d to determine the d—intercept and the slope of each line.

$4t + 3d = 9$

Solution Video

Question 1100: The dependent variable is d in each of the following equations. Isolate d to determine the d-intercept and the slope of each line.

$8d - 2h + 16 = 0$

Solution Video

Question 1101: Show that $3x - 8y + 5 = 0$ and $y = \frac{3}{8}x + \frac{5}{8}$ represents the same line.

Solution Video

Question 1102: 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?

Solution Video

Accompanying lectures for questions 1103 - 1104

Question 1103: 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?

Solution Video

Question 1104: 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.

Solution Video

Accompanying lectures for questions 1105 - 1123

Question 1105: Express each of the following equations in the form $y = mx + b$. Then, state the slope and y-intercept of each line.

$4x - 3y = 24$

Solution Video

Question 1106: Express each of the following equations in the form $y = mx + b$. Then, state the slope and y-intercept of each line.

$2x + 5y = 15$

Solution Video

Question 1107: Express each of the following equations in the form $y = mx + b$. Then, state the slope and y-intercept of each line.

$3x - 6y - 14 = 0$

Solution Video

Question 1108: Express each of the following equations in the form $y = mx + b$. Then, state the slope and y-intercept of each line.

$4x + 7y - 11 = 0$

Solution Video

Question 1109: Express each of the following equations in the form $y = mx + b$. Then, state the slope and y-intercept of each line.

$2.4x + 1.5y = -3$

Solution Video

Question 1110: Use the slope and y-intercept to sketch the graphs of each of the linear relations.

$4x - 3y = 24$

Solution Video

Question 1111: Use the slope and y-intercept to sketch the graphs of each of the linear relations.

$2x + 5y = 15$

Solution Video

Question 1112: Use the slope and y-intercept to sketch the graphs of each of the linear relations.

$3x - 6y - 14 = 0$

Solution Video

Question 1113: Use the slope and y-intercept to sketch the graphs of each of the linear relations.

$4x + 7y - 11 = 0$

Solution Video

Question 1114: Use the slope and y-intercept to sketch the graphs of each of the linear relations.

$2.4x + 1.5y = -3$

Solution Video

Question 1115: Without graphing, predict whether each of the following lines will rise or fall to the right. How do you know?

- $2x + 3y = 5$

Solution Video

Question 1116: Without graphing, predict whether each of the following lines will rise or fall to the right. How do you know?

- $2x + 5y = 15$

Solution Video

Question 1117: Without graphing, predict whether each of the following lines will rise or fall to the right. How do you know?

- $\frac{x}{2} - 3y = 6$

Solution Video

Question 1118: State whether each of the following lines will rise or fall to the right by graphing it.

$2x + 3y = 5$

Solution Video

Question 1119: State whether each of the following lines will rise or fall to the right by graphing it.

$x - 4y + 10 = 0$

Solution Video

Question 1120: State whether each of the following lines will rise or fall to the right by graphing it.

$3x + 5y - 8 = 0$

Solution Video

Question 1121: State whether each of the following lines will rise or fall to the right by graphing it.

$2.5x - 15y = 20$

Solution Video

Question 1122: State whether each of the following lines will rise or fall to the right by graphing it.

$\frac{x}{2} - 3y = 6$

Solution Video

Question 1123: The dependent variable is d in each of the following equations. Isolate d to determine the d-intercept and the slope of each line.

$15 + 5k - 6d = 0$

Solution Video

Accompanying lectures for questions 1124 - 1127

Question 1124: Use the slope and y-intercept to sketch the graphs of each of the linear relations.

$8x + 5y = 0$

Solution Video

Question 1125: Without graphing, predict whether each of the following lines will rise or fall to the right. How do you know?

- $x - 4y + 10 = 0$

Solution Video

Question 1126: Without graphing, predict whether each of the following lines will rise or fall to the right. How do you know?

- $2.5x - 15y = 20$

Solution Video

Accompanying lectures for questions 1124 - 1127

Question 1127: Show that $y = \frac{2}{3}x + \frac{7}{3}$ and $x = \frac{3}{2}y - \frac{7}{2}$ represent the same line.

Solution Video

Accompanying lectures for questions 1128 - 1128

Question 1128: A farmer wants to build new enclosures for geese, ducks, and chickens. He has $40\ \mathrm{m}$ 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.

Solution Video

Accompanying lectures for questions 1129 - 1130

Question 1129: 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?

Solution Video

Question 1130: 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.

Solution Video

Accompanying lectures for questions 1131 - 1130

Accompanying lectures for questions 1131 - 1131

Question 1131: Do $y = \frac{2}{3}x + \frac{1}{3}$ and $2x + 3y + 1 = 0$ represent the same line? How do you know?

Solution Video

5.3 Slope of a Line

Accompanying lectures for questions 1132 - 1134

Question 1132: Calculate the slope of the line through each pair of points.

$A(3, 8)$ and $B(10, 15)$

Solution Video

Question 1133: Calculate the slope of the line through the pair of points.

$I(3.5, 4.8)$ and $J(1.4, 6.2)$

Solution Video

Question 1134: Calculate the slope of the line through the pair of points.

$K(32, 630)$ and $L(58, 1020)$

Solution Video

Accompanying lectures for questions 1135 - 1141

Question 1135: Calculate the slope of the line through each pair of points.

$C(9, -2)$ and $D(8, 4)$

Solution Video

Question 1136: Calculate the slope of the line through the pair of points.

$A(-2, 5)$ and $B(4, -8)$

Solution Video

Question 1137: Calculate the slope of the line through the pair of points.

$C(0, 5)$ and $D(-2, 3)$

Solution Video

Question 1138: Calculate the slope of the line through the pair of points.

$E(5, 10)$ and $F(5, -4)$

Solution Video

Question 1139: Calculate the slope of the line through the pair of points.

$G(-7, 8)$ and $H(4, 8)$

Solution Video

Question 1140: (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?

Solution Video

Accompanying lectures for questions 1135 - 1141

Question 1141: (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?

Solution Video

Accompanying lectures for questions 1142 - 1146

Question 1142: 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.

Solution Video

Question 1143: 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

$-\frac{1}{4}$

Solution Video

Question 1144: 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

$\frac{8}{3}$

Solution Video

Question 1145: 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

Solution Video

Question 1146: 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

Solution Video

Accompanying lectures for questions 1147 - 1154

Question 1147: For the points J, K, and L, the slope of segment $\overline{\mathrm{JK}}$ is -4 and the slope of segment $\overline{\mathrm{KL}}$ is -2. Explain how you know that J, K, and L are not collinear.

Solution Video

Question 1148: Determine whether the given points are collinear.

$A(-8,0)$, $B(-6,1)$ and $C(4,6)$

Solution Video

Question 1149: Determine whether the given points are collinear.

$D(-5,17)$, $E(-12,40)$, and $F(-42,128)$

Solution Video

Question 1150: Determine whether the given points are collinear.

$G(-30,-70)$, $H(-15,-38)$, and $I(17,26)$

Solution Video

Question 1151: Determine whether the given points are collinear.

$J(-9,1), K(-12,3)$, and $L(6,-9)$

Solution Video

Question 1152: Determine the value of k if the points $X(3,2), Y(k,8)$, and $Z(k+7,29)$ are collinear.

Solution Video

Question 1153: 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.

Solution Video

Question 1154: 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.

Solution Video

Accompanying lectures for questions 1155 - 1156

Question 1155: a) What is the slope of a line that is horizontal.

b) What is the slope of a line that is vertical.

Solution Video

Question 1156: How can you tell from the coordinate of two points if the line passing through them is horizontal, vertical, or slanted?

Solution Video

Accompanying lectures for questions 1157 - 1159

Question 1157: 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?

Solution Video

Question 1158: A house worth $\$150000$ in 1999 increased by a constant rate to its value of $\$255000$ in 2007. Calculate the home's annual rate of increase in value.

Solution Video

Question 1159: 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.

Solution Video

Accompanying lectures for questions 1160 - 1160

Question 1160:

$HoursWorked$	20	25	30	40	50
$WeeklyEarnings(\$)$	390	450	510	630	750

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.

Solution Video

Accompanying lectures for questions 1161 - 1161

Question 1161:

Solution Video

Accompanying lectures for questions 1162 - 1163

Question 1162:

$Name$	$Vert.Drp(ft)$	$lenghofSope(ft)$
$snows$	256	890
$Bean$	480	4824
$Vortex$	510	3438

Which slope has the steepest slope?

Solution Video

Question 1163:

Which line has a sloe between 1.1 and 10?

Solution Video

Accompanying lectures for questions 1164 - 1164

Question 1164: 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.

Solution Video

Accompanying lectures for questions 1165 - 1166

Question 1165: 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.

Solution Video

Question 1166: 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.

Solution Video

Accompanying lectures for questions 1167 - 1168

Question 1167: 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).

Solution Video

Question 1168: For each situation write an equation of the line in the form $y = mx + b$.

- The line is horizontal and passes through (-1, -2).

Solution Video

Mid Chapter Review on Lines

Accompanying lectures for questions 1169 - 1175

Question 1169: Identify the slope and y-intercept of the line.

a. $y = 4x - 5$

b. $y = -2x + 3$

c. $y = \frac{3}{7}x - \frac{2}{3}$

Solution Video

Question 1170: 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. $y = \frac{3}{4}x + \frac{1}{3}$

Solution Video

Question 1171: 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. $y = \frac{9}{2}x + 4$

Solution Video

Question 1172: Order each of the following sets of lines based on slope, from closest to horizontal to closest to vertical.

1. $y = -\frac{1}{5}x + 8$
2. $y = -6x - \frac{5}{8}$
3. $y = -2x + 4$

Solution Video

Question 1173: 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. $y = -2x + 4$

Solution Video

Question 1174: Sketch the graph using slope and y-intercept.

$y = 2x - 4$

Solution Video

Question 1175: Sketch the graph using slope and y-intercept.

$y = -\frac{1}{4}x + 3$

Solution Video

Accompanying lectures for questions 1176 - 1176

Question 1176: 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. $x = 2$

Solution Video

Accompanying lectures for questions 1177 - 1177

Question 1177: Sketch the graph using slope and y-intercept.

$y = -\frac{7}{6}x$

Solution Video

Accompanying lectures for questions 1178 - 1183

Question 1178: Rewrite the following in the form $y = mx + b$.

$6x - 3y - 15 = 0$

Solution Video

Question 1179: Rewrite the following in the form $y = mx + b$.

$3x + 6y + 12 = 0$

Solution Video

Question 1180: Rewrite the following in the form $y = mx + b$.

$2x - 8y = 10$

Solution Video

Question 1181: Rewrite the following in the form $y = mx + b$.

$y - 10 = 0$

Solution Video

Question 1182: Rewrite the following in the form $y = mx + b$.

$4x + y - 9 = 0$

Solution Video

Question 1183: Rewrite the following in the form $y = mx + b$.

$2x - 3y = -1$

Solution Video

Accompanying lectures for questions 1184 - 1184

Question 1184: 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.

Solution Video

Accompanying lectures for questions 1185 - 1186

Question 1185: Determine the slope.

Solution Video

Question 1186: Determine the slope.

Solution Video

Accompanying lectures for questions 1187 - 1190

Question 1187: Determine the slope.

Solution Video

Question 1188: Determine the slope.

Solution Video

Question 1189: Determine the slope.

Solution Video

Accompanying lectures for questions 1187 - 1190

Question 1190: Determine the slope.

Solution Video

Accompanying lectures for questions 1191 - 1196

Question 1191: Calculate the slope of the line passing through the pair of points.

$A(3, 8)$ and $B(5, 7)$

Solution Video

Question 1192: Calculate the slope of the line passing through the pair of points.

$C(8, 9)$ and $D(-2, -2)$

Solution Video

Question 1193: Calculate the slope of the line passing through the pair of points.

$E(-8, 4)$ and $F(4, -8)$

Solution Video

Question 1194: Calculate the slope of the line passing through the pair of points.

$I(0,0)$ and $J(-3,-5)$

Solution Video

Question 1195: Calculate the slope of the line passing through the pair of points.

$M(0,4)$ and $N(-3,4)$

Solution Video

Question 1196: Calculate the slope of the line passing through the pair of points.

$P(-2,-1)$ and $Q(-2,-9)$

Solution Video

Accompanying lectures for questions 1197 - 1200

Question 1197: Determine if the points are collinear.

$A(-3,-2)$, $B(-2,1)$, and $C(2,10)$

Solution Video

Question 1198: Determine if the points are collinear.

$D(7,-1)$, $E(6,5)$, and $F(2,1)$

Solution Video

Question 1199: Determine if the points are collinear.

$G(-7,-5)$, $H(-2,10)$, and $I(-9,-11)$

Solution Video

Question 1200: Determine if the points are collinear.

$J(8,9)$, $K(-6,7)$, and $L(24,11)$

Solution Video

Accompanying lectures for questions 1201 - 1204

Question 1201: Point A has coordinates $A(3, k)$, and the slope AB is $\frac{2}{5}$. Determine the value of k for each point B.

$B(7, -2)$

Solution Video

Question 1202: 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.

$B(13, 5)$

Solution Video

Question 1203: 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.

$B(-2, 2)$

Solution Video

Question 1204: 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.

$B(9, 10)$

Solution Video

Accompanying lectures for questions 1205 - 1205

Question 1205: A catering company charges $550 for 20 guests and $775 for 35 guests. What is the cost per person?

Solution Video

Accompanying lectures for questions 1206 - 1206

Question 1206: 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?

Solution Video

5.4 Using Points to Determine the Equation of a Line

Accompanying lectures for questions 1207 - 1209

Question 1207: Find the equation from the given information

- Slope: 3
- y-intercept: 5
- Equation:

Solution Video

Question 1208: $m = -5$, y-intercept is 3, find the equation.

Solution Video

Question 1209: Determine the equation of the line described below.

passing through the point $A(0, 4)$, with a slope of $-\frac{8}{9}$

Solution Video

Accompanying lectures for questions 1210 - 1212

Question 1210: Find the missing values from the given information

- Slope:
- y-intercept:
- Equation: $y = 5x + 1$

Solution Video

Question 1211: find m and,y-int when equation of the line is $y = \frac{4}{3}x - 2$

Solution Video

Question 1212: find m and,y-int when equation of the line is $y = \frac{1}{2}x$

Solution Video

Accompanying lectures for questions 1213 - 1214

Question 1213: Match each equation to its corresponding graph.

$x = -2$

i)

ii)

iii)

iv)

Solution Video

Question 1214: Match each equation to its corresponding graph.

$y = -2$

i)

ii)

iii)

iv)

Solution Video

Accompanying lectures for questions 1215 - 1216

Question 1215: Match each equation to its corresponding graph.

$x - 2y = 4$

i)

ii)

iii)

iv)

Solution Video

Question 1216: Match each equation to its corresponding graph.

$y = -\frac{4}{3}x + 3$

i)

ii)

iii)

iv)

Solution Video

Accompanying lectures for questions 1217 - 1218

Question 1217: Determine the equation of the line with the following characteristics

has slope of -2 and passes through the point $A(5, 2)$

Solution Video

Question 1218: Determine the equation of the line described below.

passing through the point $A(3, -5)$, with a slope of $\frac{1}{5}$

Solution Video

Accompanying lectures for questions 1219 - 1227

Question 1219: Determine the equation of the line with the following characteristics

passes through the points $B(4,6)$ and $C(1,-3)$

Solution Video

Question 1220: Determine the equation of the line described below.

has an x-intercept of 6 and passes through the point $(6,4)$

Solution Video

Question 1221: Determine the equation of each line passing each pair of points.

$A(1,9), B(1,-7)$

Solution Video

Question 1222: Determine the equation of each line passing each pair of points.

$C(-8,-3), D(8,27)$

Solution Video

Question 1223: Determine the equation of each line passing each pair of points.

$E(-12,7), F(4,7)$

Solution Video

Question 1224: Determine the equation of each line passing each pair of points.

$G(6,18), H(-12,3)$

Solution Video

Question 1225: Determine the equation of each line passing each pair of points.

$I(0,5)$ and $J(0,12)$

Solution Video

Question 1226: Determine the equation of each line passing each pair of points.

$K(-5,-1), L(15,1)$

Solution Video

Question 1227: 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 $3x+2y-6=0$.

Solution Video

Accompanying lectures for questions 1228 - 1228

Question 1228: $m = 0$, y-intercept is 2, find the equation.

Solution Video

Accompanying lectures for questions 1229 - 1234

Question 1229: Determine the equation of each line.

Solution Video

Question 1230: Determine the equation of each line.

Solution Video

Question 1231: Determine the equation of each line.

Solution Video

Accompanying lectures for questions 1229 - 1234

Question 1232: Determine the equation of each line.

Solution Video

Question 1233: Determine the equation of each line.

Solution Video

Question 1234: Determine the equation of each line.

Solution Video

Accompanying lectures for questions 1235 - 1240

Question 1235: If the equation $y = 3x + b$ represents a line that passes through the given point, determine the value of the y-intercept b.

$(4, 1)$

Solution Video

Question 1236: If the equation $y = 3x + b$ represents a line that passes through the given point, determine the value of the y-intercept b.

$(-3, 2)$

Solution Video

Question 1237: If the equation $y = 3x + b$ represents a line that passes through the given point, determine the value of the y-intercept b.

$(1, -3)$

Solution Video

Question 1238: If the equation $y = mx + 3$ represents a line that passes through the given point, determine the value of m.

$(2, 4)$

Solution Video

Question 1239: If the equation $y = mx + 3$ represents a line that passes through the given point, determine the value of m.

$(-3, 7)$

Solution Video

Question 1240: If the equation $y = mx + 3$ represents a line that passes through the given point, determine the value of m.

$(8, 2)$

Solution Video

Accompanying lectures for questions 1241 - 1241

Question 1241: Determine the equation of the line described below.

has an x-intercept of 4 and a y-intercept of -3

Solution Video

Accompanying lectures for questions 1242 - 1242

Question 1242: 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?

Solution Video

Accompanying lectures for questions 1243 - 1244

Question 1243: 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?

Solution Video

Question 1244: 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.

$Month$	$NumberofSongsDownloaded$	$MonthlyBill(\$)$
$January$	54	26.90
$February$	38	25.30
$March$	21	23.60

(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?

Solution Video

Accompanying lectures for questions 1245 - 1245

Question 1245: Determine the equation of the **median** from Q to the midpoint of PR, in triangle PQR, with $P(4,8)$, $Q(3,2)$, and $R(6,4)$.

Solution Video

Accompanying lectures for questions 1246 - 1249

Question 1246: 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:

$y = m(x - p) + q$

Solution Video

Question 1247: 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.

Solution Video

Question 1248:

- 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.

Solution Video

Accompanying lectures for questions 1246 - 1249

Question 1249: 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 $(4, 5), (3, 9)$

Solution Video

5.5 Parallel and Perpendicular Lines

Accompanying lectures for questions 1250 - 1260

Question 1250: State an equation of a line parallel to $y = -\frac{3}{2}x + 9$.

Solution Video

Question 1251: Write the equation of a line parallel to the x-axis that passes through the point (1, 4).

Solution Video

Question 1252: Write the equation of a line parallel to the x-axis that passes through the point (3, -8).

Solution Video

Question 1253: In general, what is true about the equation of any line parallel to the x-axis?

Solution Video

Question 1254: Write the equation of a line parallel to the y-axis that passes through the point (-9, 3).

Solution Video

Question 1255: Write the equation of a line parallel to the y-axis that passes through the point (6, 2).

Solution Video

Accompanying lectures for questions 1250 - 1260

Question 1256: In general, what is true about the equation of any line parallel to the y-axis?

Solution Video

Question 1257: 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 $(3, -5)$

Solution Video

Question 1258: 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

Solution Video

Question 1259: Determine the value of k in each graph.

Solution Video

Question 1260: 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.

Solution Video

Accompanying lectures for questions 1261 - 1268

Question 1261: State an equation of a line perpendicular to $y = -\frac{3}{2}x + 9$.

Solution Video

Question 1262: 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 $(3, -5)$

Solution Video

Question 1263: 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

Solution Video

Question 1264: Determine the equation of a line perpendicular to $4x - 3y - 2 = 0$ with the same y-intercept as the line defined by $3x + 4y = -12$.

Solution Video

Question 1265: Determine the equation of a line perpendicular to $2x - 5y = 6$ with the same x-intercept as the line defined by $3x + 8y - 15 = 0$.

Solution Video

Question 1266: Determine the value of k in each graph.

Solution Video

Question 1267: 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.

Solution Video

Question 1268: 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.

Solution Video

Accompanying lectures for questions 1269 - 1276

Question 1269: 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) $y = \frac{-2}{7}x - 9$

Solution Video

Question 1270: For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

$y = 2x + 5$

$y = -\frac{1}{2}x - 4$

Solution Video

Question 1271: For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

$y = \frac{2}{3}x - 2$

$y = -1.5x - 6$

Solution Video

Question 1272: For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

$y = \frac{3}{7}x - 4$

$y = -\frac{3}{7}x - 4$

Solution Video

Question 1273: For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

$x - 4y = 2$

$2x - 8y = 3$

Solution Video

Question 1274: For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

$y = -0.2x - 1$

$y = -\frac{1}{5}x + 3$

Solution Video

Question 1275: For the pair of equations, state whether the lines are parallel, perpendicular, or neither.

$x - 5y + 8 = 0$

$5x - y = 0$

Solution Video

Question 1276: Are the lines defined by the equations $y = 4$ and $x = 3$ parallel, perpendicular, or neither? Explain.

Solution Video

Accompanying lectures for questions 1277 - 1277

Question 1277: 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 $L(6,16)$

Solution Video

Accompanying lectures for questions 1278 - 1279

Question 1278: For the given vertices, determine whether or not $\triangle$ ABC is a right triangle.

$A(13, 3)$, $B(3, 5)$, and $C(-2, -20)$

Solution Video

Question 1279: For the given vertices, determine whether or not $\triangle$ ABC is a right triangle.

$A(5, 4)$, $B(-1, 2)$, and $C(2, -1)$

Solution Video

Accompanying lectures for questions 1280 - 1280

Question 1280: Show algebraically that the points $A(-4, 7)$, $B(6.5, 1)$, $C(-8, 0)$, and $D(2.5, -6)$ form a rectangle.

Solution Video

Accompanying lectures for questions 1281 - 1281

Question 1281: $\overline{AM}$ is a median. Show that $\overline{AM}$ is perpendicular to $\overline{BC}$.

Solution Video

Accompanying lectures for questions 1282 - 1282

Question 1282: ABCD is a rhombus. Show that the diagonals of the rhombus are perpendicular to each other.

Solution Video

Analytical Geometry Chapter Review

Accompanying lectures for questions 1283 - 1285

Question 1283: Identify the slope and y-intercept for each line.

$a)\quad y = 3x + 4$ $\qquad c)\quad y = -1.11 + 9.7x$

$b)\quad y = -\frac{2}{5}x - 6.8$ $\qquad d)\quad y = 3$

Solution Video

Question 1284: Order the set of lines from closest to horizontal to closest to vertical.

$y = 2x - 4$

$y = x + 8$

$y = \frac{1}{3}x - 2$

Solution Video

Question 1285: Order the set of lines from closest to horizontal to closest to vertical.

$y = -\frac{1}{3}x + 5$

$y = -8x - 2$

$y = -\frac{5}{2}x + 3$

Solution Video

Accompanying lectures for questions 1286 - 1286

Question 1286: Copy and complete the table to identify whether the lines will rise or fall to the right.

$Equation$	$RisestotheRight$	$FallstotheRight$
$y = 4x + 5$		
$y = -\frac{2}{3}x - 8$		
$y = -2.8x + 4$		
$y = \frac{21}{8}x$		
$y = 1.5x + 4.5$		

Solution Video

Accompanying lectures for questions 1287 - 1287

Question 1287: Determine the slope and y-intercept.

$3x - 4y + 9 = 0$

Solution Video

Accompanying lectures for questions 1288 - 1290

Question 1288: Determine the slope and y-intercept.

$5x - y = 12$

Solution Video

Question 1289: Determine the slope and y-intercept.

$2x + 6y = 32$

Solution Video

Question 1290: Determine the slope and y-intercept.

$8x + 2y - 4 = 0$

Solution Video

Accompanying lectures for questions 1291 - 1291

Question 1291: 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?

Solution Video

Accompanying lectures for questions 1292 - 1293

Question 1292: Calculate the slopes of the line segments shown below.

Solution Video

Question 1293: Determine the equation of each line.

Solution Video

Accompanying lectures for questions 1294 - 1297

Question 1294: Calculate the slopes of the lines that pass through each of the following pairs of points.

A(8, 2) and B(1, 9)

Solution Video

Question 1295: Calculate the slopes of the lines that pass through each of the following pairs of points.

E(-1, 5) and F(3, 2)

Solution Video

Question 1296: Calculate the slopes of the lines that pass through each of the following pairs of points.

C(-1, 2) and D(3, -8)

Solution Video

Accompanying lectures for questions 1294 - 1297

Question 1297: Calculate the slopes of the lines that pass through each of the following pairs of points.

G(-3, 2) and H(-9, -11)

Solution Video

Accompanying lectures for questions 1298 - 1298

Question 1298: The points $(-6,-3)$, $(k,1)$, and $(8,4)$ are collinear. Determine the value of k.

Solution Video

Accompanying lectures for questions 1299 - 1299

Question 1299: 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?

Solution Video

Analytical Geometry Chapter Test

Chapter 6 Data Relationships

6.1 Interpreting Data

Accompanying lectures for questions 1300 - 1301

Question 1300: 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?

Solution Video

Question 1301: 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.

Solution Video

Accompanying lectures for questions 1302 - 1304

Question 1302:

$Speed(\mathrm{km/h})$	3	8	11	16	21	26	32	40	50	60	64
$FuelConsumption(\mathbf{L/100}\mathrm{km})$	14.9	5.3	4.7	3.8	3.5	3.3	3.2	3.1	3.1	3.1	3.1

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.

Solution Video

Question 1303: This table shows the birth rates in four provinces over the last few years.

Number of Births per 1000 People

$Year$	$Alberta$	$BritishColumbia$	$Newfoundlandand Labrador$	$Ontario$
2001	12.4	9.8	8.8	10.9
2002	12.8	9.9	8.8	10.8
2003	12.9	9.7	8.9	10.9
2004	12.9	9.7	8.6	10.8
2005	12.7	9.6	8.6	10.6

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?

Solution Video

Question 1304: The data below show the number of car accidents in a year for different age groups.

$AgeGroup$	$Numberof Accidents$
$16-19$	6382
$20-24$	7183
$25-34$	11733
$35-44$	8990
$45-54$	5517
$55-64$	3307
$65-74$	2308

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.

Solution Video

6.2 Lines of Best Fit

Accompanying lectures for questions 1305 - 1305

Question 1305: 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.

Solution Video

Accompanying lectures for questions 1306 - 1309

Question 1306: 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.

x	19	10	6	16	15	9	12	21
y	10	4	2	5	7	3	8	8

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 $x = 27$.

Solution Video

Question 1307: 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.

$Number of Days$	1	2	3	4	5	6	7
Total Number of Seats Completed	97	204	327	443	539	661	795

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.

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?

Solution Video

Question 1308: 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.)

Game	Minutes Played	Field Goals		Free Throws		Points
		Made	Attempted	Made	Attempted	
1	32	5	13	4	6	14
2	30	4	10	3	3	11
3	24	2	6	1	1	5
4	29	1	3	2	4	4
5	36	3	6	0	1	6
6	19	5	11	2	2	12
7	12	0	3	0	4	0
8	21	1	5	1	2	3
9	18	3	5	1	5	7
10	19	3	7	2	6	8

- Use a line of best fit to estimate the number of field goals Kim would make if nine were attempted.

Solution Video

Accompanying lectures for questions 1306 - 1309

Question 1309: 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.)

Game	Minutes Played	Field Goals		Free Throws		Points
		Made	Attempted	Made	Attempted	
1	32	5	13	4	6	14
2	30	4	10	3	3	11
3	24	2	6	1	1	5
4	29	1	3	2	4	4
5	36	3	6	0	1	6
6	19	5	11	2	2	12
7	12	0	3	0	4	0
8	21	1	5	1	2	3
9	18	3	5	1	5	7
10	19	3	7	2	6	8

- Use a line of best fit to estimate the number of points Kim would score if she played for 40 min.

Solution Video

6.3 Curves of Best Fit

6.4 Reasoning About Data

6.5 Describing Situations from Graphs

Question 1310: 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.

Solution Video

Question 1311: 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?

Solution Video

Question 1312: Describe a situation that could match this graph.

Solution Video

Accompanying lectures for questions 1310 - 1320

Question 1313: Write a story for the graph.

Solution Video

Question 1314: Write a story for the graph.

Solution Video

Question 1315: 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.

Solution Video

Question 1316: 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.

Solution Video

Question 1317: 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.

Solution Video

Question 1318: 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.

Solution Video

Question 1319: 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.

Solution Video

Question 1320: 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.

Solution Video

Accompanying lectures for questions 1321 - 1322

Question 1321: 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.

$Time(s)$	$Distance(m)$
7	19
8	22
9	25
10	28
11	31

Solution Video

Question 1322:

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.

$Time(s)$	$Distance(m)$
0	0
1	7
2	16
3	29

Solution Video

Chapter Review

Accompanying lectures for questions 1323 - 1324

Question 1323: 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.

Solution Video

Question 1324: 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.

Solution Video

Accompanying lectures for questions 1325 - 1325

Question 1325: 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.

$ShoeSize$	8.5	9.0	9.0	10.0	10.5
$Height(cm)$	166	174	169	178	175

$ShoeSize$	10.5	11.0	11.5	12.0	12.5
$Height(cm)$	183	187	182	190	184

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.

Solution Video

Accompanying lectures for questions 1326 - 1326

Question 1326: 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.

Solution Video

Chapter Test

Accompanying lectures for questions 1327 - 1327

Question 1327: 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.

Solution Video

Accompanying lectures for questions 1328 - 1328

Question 1328: 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.

$SpeakingTime(h)$	24	31	40	41	50	29	38	62	47
$NumberofSmokers$	36	27	16	10	3	23	20	1	19

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.

Solution Video

Accompanying lectures for questions 1329 - 1329

Question 1329: 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?

Solution Video

Chapter 4 to 6 Cumulative Review; Lines and Linear Relationship

Accompanying lectures for questions 1330 - 1331

Question 1330:

Select the line that best represents the line of best fit for this scatter plot.

A.

C.

B.

D.

Solution Video

Question 1331: 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

Solution Video

Chapter 7 2-D Geometry

7.0 Getting Started

Accompanying lectures for questions 1332 - 1332

Question 1332: Find the angles for the missing values.

Solution Video

Accompanying lectures for questions 1333 - 1334

Question 1333: Find the angles for the missing values.

Solution Video

Question 1334: Find the missing value.

Solution Video

Accompanying lectures for questions 1335 - 1336

Question 1335: Determine the value of the missing angles.

Solution Video

Question 1336: Determine the value of the missing angles.

Solution Video

Accompanying lectures for questions 1337 - 1339

Question 1337: Find the missing value.

Solution Video

Question 1338: Find the missing value.

Solution Video

Question 1339: Find the missing value.

Solution Video

7.1 Exploring Interior Angles of Polygons

Accompanying lectures for questions 1340 - 1349

Question 1340: 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?

Solution Video

Question 1341: 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?

Solution Video

Question 1342: 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?

Solution Video

Accompanying lectures for questions 1340 - 1349

Question 1343: 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?

Solution Video

Question 1344: Calculate the sum of the interior angles of each polygon.

Solution Video

Question 1345: Calculate the sum of the interior angles of each polygon.

Solution Video

Question 1346: Calculate the sum of the interior angles of each polygon.

Solution Video

Question 1347: Calculate the sum of the interior angles of each polygon.

Solution Video

Question 1348: Polygon A is a regular 10-gon and polygon B is an irregular 10-gon. Are the sums of their interior angles equal? Explain.

Solution Video

Question 1349: What is the measure of each interior angle of a regular 14-gon?

Solution Video

Accompanying lectures for questions 1350 - 1350

Question 1350: The sum of the interior angles in a polygon is 1440°. How many sides does the polygon have?

Solution Video

7.2 Angle Properties of Polygons

Accompanying lectures for questions 1351 - 1362

Question 1351: What is the relationship between the interior angle and the exterior angle at each vertex of a polygon?

Solution Video

Question 1352: Determine the measure of each missing angle.

Solution Video

Question 1353: Determine the measure of each missing angle.

Solution Video

Accompanying lectures for questions 1351 - 1362

Question 1354: Determine the measure of each missing angle.

Solution Video

Question 1355: Determine the measure of each missing angle.

Solution Video

Question 1356: In this diagram, $\angle E$ in $\triangle BEC$ is a right angle. What is the sum of angles a and d?

Solution Video

Question 1357: What is the measure of $\angle CAB$ in this diagram?

Solution Video

Question 1358: Determine the measure of each missing angle.

Solution Video

Question 1359: Determine the measure of each missing angle.

Solution Video

Accompanying lectures for questions 1351 - 1362

Question 1360: 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.

Solution Video

Question 1361: 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.

Solution Video

Question 1362: For any regular n-gon, developed a formula for calculating the measure of each interior angle. Explain your steps.

Solution Video

Accompanying lectures for questions 1363 - 1366

Question 1363: Determine the measure of each missing angle.

Solution Video

Question 1364: Determine the measure of each missing angle.

Solution Video

Question 1365: 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.

Solution Video

Accompanying lectures for questions 1363 - 1366

Question 1366: In $\triangle$ ABC, the measure of$\angle B$ is 21° less than the angle of $\angle A$ multiplied by 4. The measure of $\angle C$ is 1° more than the measure of $\angle A$ multiplied by 5. Determine the measure of each interior angle and each exterior angle of $\triangle ABC$.

Solution Video

Accompanying lectures for questions 1367 - 1370

Question 1367: In the diagram, AB is parallel to FG and BC is parallel to DE.

- What is the relationship between $\angle 1$ and $\angle 2$?

Solution Video

Question 1368: Determine the measure of each missing angle in this parallel line setup.

Solution Video

Question 1369: Determine the measure of each missing angle.

Solution Video

Accompanying lectures for questions 1367 - 1370

Question 1370: 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.

Solution Video

Accompanying lectures for questions 1371 - 1371

Question 1371: 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.

Solution Video

Accompanying lectures for questions 1372 - 1372

Question 1372: 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?

Solution Video

7.3 Exploring Quadrilateral Diagonal Properties

Accompanying lectures for questions 1373 - 1375

Question 1373: 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

Solution Video

Question 1374: 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

Solution Video

Question 1375: 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

Solution Video

Accompanying lectures for questions 1376 - 1376

Question 1376: Match each pair of diagonals with its quadrilateral. Explain your reasoning.

Solution Video

Mid Chapter Review

Accompanying lectures for questions 1377 - 1377

Question 1377: Determine the measure of the missing interior angle.

Solution Video

Accompanying lectures for questions 1378 - 1379

Question 1378: Determine the measure of the missing interior angle.

Solution Video

Question 1379: Determine the measure of the missing interior angle.

Solution Video

Accompanying lectures for questions 1380 - 1385

Question 1380: Determine the measure of the missing interior angle.

Solution Video

Question 1381: Determine the measure of the missing interior angle.

Solution Video

Question 1382: Determine the measure of the missing interior angle.

Solution Video

Accompanying lectures for questions 1380 - 1385

Question 1383: Determine the measure of the missing angle. Support your answer with mathematical reasoning.

Solution Video

Question 1384: Determine the measure of the missing angle. Support your answer with mathematical reasoning.

Solution Video

Question 1385: Determine the measure of the missing angle. Support your answer with mathematical reasoning.

Solution Video

Accompanying lectures for questions 1386 - 1386

Question 1386: Determine the measure of the missing angle. Support your answer with mathematical reasoning.

Solution Video

Accompanying lectures for questions 1387 - 1387

Question 1387: Complete the table for each regular polygon.

Figure	Measure of Each Interior Angle	Measure of Each Exterior Angle	Sum of Interior Angles	Sum of Exterior Angles

Solution Video

7.4 Reasoning About Triangle and Quadrilateral Properties

Accompanying lectures for questions 1388 - 1393

Question 1388: 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.

Solution Video

Question 1389: 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.

Solution Video

Question 1390: 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.

Solution Video

Question 1391: Test this conjecture: “If the midsegments of a quadrilateral form a square, then the quadrilateral is itself a square.”

Solution Video

Question 1392: Test this conjecture: “The medians of a triangle always intersect at exactly one point.”

Solution Video

Question 1393: Test this conjecture: “It is always possible to draw a circle through all four vertices in a rectangle.”

Solution Video

7.5 Reasoning About Properties of Polygons

Accompanying lectures for questions 1394 - 1394

Question 1394: 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?

Solution Video

Accompanying lectures for questions 1395 - 1396

Question 1395: 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.

Solution Video

Question 1396: 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?

Solution Video

Chapter Review Reasoning with Geometry

Accompanying lectures for questions 1397 - 1399

Question 1397: Calculate the missing angle.

Solution Video

Question 1398: Calculate the missing angle.

Solution Video

Question 1399: Calculate the value of x.

Solution Video

Accompanying lectures for questions 1400 - 1403

Question 1400: Billy claims that the sum of the interior angles of a regular octagon is 900°. Is he correct? Justify your decision.

Solution Video

Question 1401: a) Calculate the measure of each interior angle of a regular 25- gon.

b) What is the measure of each exterior angle?

Solution Video

Question 1402: Find the value of the unknown.

Solution Video

Accompanying lectures for questions 1400 - 1403

Question 1403: Find the value of the unknown.

Solution Video

Accompanying lectures for questions 1404 - 1405

Question 1404: 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.

Solution Video

Question 1405: 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°.

Solution Video

Accompanying lectures for questions 1406 - 1408

Question 1406: Find the value of the unknown.

Solution Video

Question 1407: Find the value of the unknown.

Solution Video

Question 1408: Calculate the value of x.

Solution Video

Accompanying lectures for questions 1409 - 1413

Question 1409: Describe the possible type(s) of quadrilateral that could be made with each set of diagonals. Justify your answers.

Solution Video

Question 1410: Describe the possible type(s) of quadrilateral that could be made with each set of diagonals. Justify your answers.

Solution Video

Question 1411: Describe the possible type(s) of quadrilateral that could be made with each set of diagonals. Justify your answers.

Solution Video

Question 1412: Describe the possible type(s) of quadrilateral that could be made with each set of diagonals. Justify your answers.

Solution Video

Question 1413: 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?

Solution Video

Accompanying lectures for questions 1414 - 1414

Question 1414: 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.

Solution Video

Chapter Test Properties of 2D figures

Accompanying lectures for questions 1415 - 1416

Question 1415: Determine the missing angles.

Solution Video

Question 1416: Determine the missing angles.

Solution Video

Chapter 8 3D Geometry

8.1 Determining Optimum Area and Perimeter

Accompanying lectures for questions 1417 - 1427

Question 1417: Each rectangle has a perimeter of 64 units. Which one has the greatest area?

Solution Video

Question 1418: Determine the maximum area of a rectangle with each perimeter, to one decimal place.

- P = 100 cm

Solution Video

Question 1419: Determine the maximum area of a rectangle with each perimeter, to one decimal place.

- P = 72 m

Solution Video

Question 1420: Determine the maximum area of a rectangle with each perimeter, to one decimal place.

- P=169 km

Solution Video

Question 1421: Determine the maximum area of a rectangle with each perimeter, to one decimal place.

- P= 143 mm

Solution Video

Question 1422: 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?

Solution Video

Question 1423: The same piece of string was used to create these three rectangles. Which one has the maximum area? Explain your thinking.

Solution Video

Question 1424: 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?

Solution Video

Question 1425: Determine the dimensions of a rectangle with a perimeter of 40 cm and the greatest possible area.

Solution Video

Question 1426: 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?

Solution Video

Question 1427: 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?

Solution Video

Accompanying lectures for questions 1428 - 1434

Question 1428: Draw rectangle with areas of 36 square units on grid paper. Which one has the least perimeter?

Solution Video

Question 1429: 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

Solution Video

Question 1430: 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

Solution Video

Question 1431: 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

Solution Video

Question 1432: 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

Solution Video

Question 1433: 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.

$Width(\mathrm{m})$	1	2	3	4	6	9	12	14	21	42
$Length(\mathrm{m})$										
$Perimeter(\mathrm{m})$										

- 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.

Solution Video

Accompanying lectures for questions 1428 - 1434

Question 1434: 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.

Solution Video

8.2 Problems Involving Composite Shapes

Accompanying lectures for questions 1435 - 1443

Question 1435: Calculate the shaded area of each figure.

Solution Video

Question 1436: Calculate the shaded area of each figure.

Solution Video

Question 1437: Calculate the perimeter and area of each shape.

Solution Video

Accompanying lectures for questions 1435 - 1443

Question 1438: Calculate the perimeter and area of each shape.

Solution Video

Question 1439: Calculate the shaded area of each figure.

Solution Video

Question 1440: Calculate the shaded area of each figure.

Solution Video

Accompanying lectures for questions 1435 - 1443

Question 1441: Calculate the shaded area of each figure.

Solution Video

Question 1442: Calculate the area and perimeter of this shape.

Solution Video

Question 1443: **(a)** Divide it into simpler polygons.

(b) Calculate the area of the shape. Explain your thinking.

Solution Video

Accompanying lectures for questions 1444 - 1447

Question 1444: Calculate the shaded area of each figure.

Solution Video

Question 1445: Calculate the shaded area of each figure.

Solution Video

Question 1446: Determine an expression for the shaded area of each figure.

Solution Video

Accompanying lectures for questions 1444 - 1447

Question 1447: Determine an expression for the shaded area of each figure.

Solution Video

Accompanying lectures for questions 1448 - 1454

Question 1448: Calculate the area and perimeter of each regular polygon.

Solution Video

Question 1449: Calculate the area and perimeter of each regular polygon.

Solution Video

Question 1450: Calculate the area and perimeter of each regular polygon.

Solution Video

Question 1451: Calculate the length of one side of each regular polygon.

Solution Video

Question 1452: Calculate the length of one side of each regular polygon.

Solution Video

Question 1453: **(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.

Solution Video

Accompanying lectures for questions 1448 - 1454

Question 1454: Calculate the area and perimeter of this shape. Explain what you did.

Solution Video

Accompanying lectures for questions 1455 - 1455

Question 1455: Determine an expression for the shaded area of each figure.

Solution Video

8.3 The Pythagorean Theorem

Accompanying lectures for questions 1456 - 1456

Question 1456: Determine the missing length.

Solution Video

Accompanying lectures for questions 1457 - 1460

Question 1457: Determine the missing length.

Solution Video

Question 1458: Determine the missing length.

Solution Video

Question 1459: Determine the missing length.

Solution Video

Accompanying lectures for questions 1457 - 1460

Question 1460: What is the length of the direct flight path from Desaulniers to Callander?

Solution Video

Accompanying lectures for questions 1461 - 1463

Question 1461: Calculate the missing length.

Solution Video

Question 1462: Calculate the missing length.

Solution Video

Question 1463: Calculate the missing length.

Solution Video

Accompanying lectures for questions 1464 - 1468

Question 1464: A path is being constructed between the corners of the school playground, as shown. Determine the length of the path.

Solution Video

Question 1465: Determine the length of the hypotenuse.

Solution Video

Question 1466: Determine the length of the hypotenuse.

Solution Video

Accompanying lectures for questions 1464 - 1468

Question 1467: Determine the length of the hypotenuse.

Solution Video

Question 1468: Determine the area of each square.

Solution Video

Accompanying lectures for questions 1469 - 1469

Question 1469: Determine the lengths of the boom and the forestay to one decimal place.

Solution Video

Accompanying lectures for questions 1470 - 1470

Question 1470: 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.

Solution Video

Accompanying lectures for questions 1471 - 1474

Question 1471: 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

Solution Video

Question 1472: 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

Solution Video

Question 1473: 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

Solution Video

Accompanying lectures for questions 1471 - 1474

Question 1474: 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

Solution Video

Accompanying lectures for questions 1475 - 1475

Question 1475: 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.

Solution Video

Accompanying lectures for questions 1476 - 1476

Question 1476: 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.

Solution Video

8.4 Surface Area of Right Pyramids and Cones

Accompanying lectures for questions 1477 - 1492

Question 1477: Calculate the surface area of each type of candle.

Solution Video

Question 1478: Calculate the surface area of each type of candle.

Solution Video

Question 1479: Calculate the surface area of each shape.

Solution Video

Question 1480: Calculate the surface area.

Solution Video

Question 1481: Calculate the surface area.

Solution Video

Question 1482: Calculate the surface area.

Solution Video

Question 1483: There are two shapes of snow—cone cups at the Fall Fair. Which cup uses less material? Assume that the bases are regular polygons.

Solution Video

Question 1484: Calculate the surface area of each regular pyramid.

Solution Video

Question 1485: Calculate the surface area of each regular pyramid.

Solution Video

Question 1486: Calculate the surface area of each regular pyramid.

Solution Video

Question 1487: Calculate the surface area of each cone.

Solution Video

Question 1488: Calculate the surface area of each cone.

Solution Video

Question 1489: Calculate the surface area of each cone.

Solution Video

Question 1490:

Calculate the surface area of this pyramid.

Calculate the surface area of this pyramid.

Solution Video

Question 1491: 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.

Solution Video

Question 1492: Determine the surface area of the tent. Include the floor in your calculation.

Solution Video

Accompanying lectures for questions 1493 - 1495

Question 1493: Determine the surface area of a square pyramid with a height of 11.0 cm and a base area of 36.0 cm^2.

Solution Video

Question 1494: 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.

Solution Video

Question 1495: 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.

Solution Video

Accompanying lectures for questions 1496 - 1496

Question 1496: Determine the slant height of a cone with a height of 8 cm and a radius of 4 cm.

Solution Video

Accompanying lectures for questions 1497 - 1497

Question 1497: 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.

Solution Video

Accompanying lectures for questions 1498 - 1499

Question 1498: 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,

Solution Video

Question 1499: 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?

Solution Video

Mid Chapter Review on Measurements

Accompanying lectures for questions 1500 - 1503

Question 1500: Each rectangle has a perimeter of 48 units. Predict which has the greatest area. Explain.

Solution Video

Question 1501: Calculate the maximum area for a rectangle with perimeter of 100 cm.

Solution Video

Question 1502: Calculate the maximum area for a rectangle with perimeter of 20 m.

Solution Video

Accompanying lectures for questions 1500 - 1503

Question 1503: Calculate the maximum area for a rectangle with perimeter of 24 km.

Solution Video

Accompanying lectures for questions 1504 - 1504

Question 1504: Draw rectangles with areas of 72 square units on grid paper. Determine which rectangle has the least perimeter, and then, calculate its perimeter.

Solution Video

Accompanying lectures for questions 1505 - 1505

Question 1505: Rosie is building a rectangular garden centre with an area of $98m^2$ attached to the side of her store. Determine the minimum length of wood needed for a fence on the three open sides.

Solution Video

Accompanying lectures for questions 1506 - 1506

Question 1506: 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?

Solution Video

Accompanying lectures for questions 1507 - 1507

Question 1507: 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?

Solution Video

Accompanying lectures for questions 1508 - 1510

Question 1508: Determine the surface area of each shape.

Solution Video

Question 1509: Determine the surface area of each shape.

Solution Video

Question 1510: 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?

Solution Video

8.5 Volumes of Pyramids and Cones

Accompanying lectures for questions 1511 - 1514

Question 1511: Calculate the volume of the gift box.

Solution Video

Question 1512: 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.

Solution Video

Question 1513: A pyramid and a prism with the same height both have a base area of 64 cm^2. How do their volumes compare?

Solution Video

Accompanying lectures for questions 1511 - 1514

Question 1514: 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.

Solution Video

Accompanying lectures for questions 1515 - 1519

Question 1515: Calculate the volume of the cone.

Solution Video

Question 1516: 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.

Solution Video

Question 1517: Calculate the volume of the cone.

Solution Video

Question 1518: 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?

Solution Video

Question 1519: 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?

Solution Video

Accompanying lectures for questions 1520 - 1521

Question 1520: A square-based pyramid has a volume of 100 cm^3 and a base of 40 cm^2. What is its height?

Solution Video

Question 1521: 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?

Solution Video

8.6 Volume and Surface Area of a Sphere

Accompanying lectures for questions 1522 - 1526

Question 1522: Calculate the surface area of a tennis ball with a radius of 3.0 cm.

Solution Video

Question 1523: Calculate the surface area of a soccer ball with a radius of 12 cm. Explain what you did.

Solution Video

Question 1524: 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.

Solution Video

Question 1525: 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?

Solution Video

Question 1526: 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?

Solution Video

Accompanying lectures for questions 1527 - 1533

Question 1527: Calculate the volume of the beach ball.

Solution Video

Question 1528: Calculate how much water you would need to fill a round water ballon with a radius of 5 cm.

Solution Video

Question 1529: 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?

Solution Video

Question 1530: 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 $4.2cm$.

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?

Solution Video

Question 1531: 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?

Solution Video

Question 1532: 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?

Solution Video

Accompanying lectures for questions 1527 - 1533

Question 1533: 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?

Solution Video

Accompanying lectures for questions 1534 - 1535

Question 1534: Mars has a surface area of about $144800000km^2$.

Determine the circumference of Mars to the nearest hundred kilometres.

Solution Video

Question 1535: **a)** Complete the table.

$Shape$	$SurfaceArea\ (\mathrm{cm}^2)$	$Dimensions(\mathrm{cm})$	$Volume\ (\mathrm{cm}^3)$
$square-basedprism$	1000	$s=10, h=x$	
$cylinder$	1000	$r=10, h=x$	
$sphere$	1000	$r \doteq x$	

b) Which shape has the greatest volume?

Solution Video

Accompanying lectures for questions 1536 - 1537

Question 1536: 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?

Solution Video

Question 1537: 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.

Solution Video

Accompanying lectures for questions 1538 - 1538

Question 1538: Determine the surface area of a ball bearing with a volume of $6.75cm^3$.

Solution Video

Accompanying lectures for questions 1539 - 1539

Question 1539: 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?

Solution Video

8.8 Optimum Volume and Surface Area

Chapter Review

Accompanying lectures for questions 1540 - 1540

Question 1540: 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?

Solution Video

Accompanying lectures for questions 1541 - 1542

Question 1541: What is the minimum perimeter possible for a rectangle with an area of $500cm^2$?

Solution Video

Question 1542: Denzel wants to rope off a $800m^2$ 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?

Solution Video

Accompanying lectures for questions 1543 - 1543

Question 1543: 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?

Solution Video

Accompanying lectures for questions 1544 - 1544

Question 1544: Calculate the area of the figure.

Solution Video

Accompanying lectures for questions 1545 - 1545

Question 1545: 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.

Solution Video

Accompanying lectures for questions 1546 - 1546

Question 1546: Calculate the area and perimeter of each regular polygon.

Solution Video

Accompanying lectures for questions 1547 - 1547

Question 1547: Calculate the area and perimeter of each regular polygon.

Solution Video

Accompanying lectures for questions 1548 - 1548

Question 1548: 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.

Solution Video

Accompanying lectures for questions 1549 - 1549

Question 1549: Find the length of x accurate to the nearest tenth.

Solution Video

Accompanying lectures for questions 1550 - 1550

Question 1550: Determine the length of the fence around the playground.

Solution Video

Accompanying lectures for questions 1551 - 1551

Question 1551: A right triangle's legs are $20\ \mathrm{cm}$ and $48\ \mathrm{cm}$. What is the area of the square whose side length is equal to the hypotenuse?

Solution Video

Accompanying lectures for questions 1552 - 1553

Question 1552: Calculate the surface area of the regular pyramid.

Solution Video

Question 1553: 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 $35m^2$. 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.

Solution Video

Accompanying lectures for questions 1554 - 1556

Question 1554: 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.

Solution Video

Question 1555: Calculate the volume and surface area of each figure.

Solution Video

Question 1556: 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?

Solution Video

Accompanying lectures for questions 1557 - 1557

Question 1557: 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.

Solution Video

Accompanying lectures for questions 1558 - 1559

Question 1558: Calculate the volume and surface area of each figure.

Solution Video

Question 1559: 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.

Solution Video

Accompanying lectures for questions 1560 - 1560

Question 1560: Calculate the volume and surface area of this sphere.

Solution Video

Accompanying lectures for questions 1561 - 1561

Question 1561: 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.

Solution Video

Chapter Test Measurement

Ch7-8 Cumulative Review of Geometry

Accompanying lectures for questions 1562 - 1562

Question 1562:

In which diagram is $x = 150^\circ$?

A.

B.

C.

D.

Solution Video

Accompanying lectures for questions 1563 - 1571

Question 1563:

Which statement is not always true?

A. If the two pairs of opposite sides of a quadrilateral are congruent, the figure must be a parallelogram.

B. The diagonals of a rhombus are perpendicular.

C. The diagonals of a square are perpendicular bisectors.

D. The diagonals of a parallelogram are always congruent.

Solution Video

Question 1564: Determine the length of the red line segment.

A. 60 cm

B. 35 cm

C. 30 cm

D. 16 cm

Solution Video

Question 1565:

How many counterexamples are needed to disprove a conjecture?

A. 1

B. 2

C. 5

D. 10

Solution Video

Question 1566:

In which of the following quadrilaterals do the midsegments form a parallelogram?

A. rhombus
B. trapezoid
C. rectangle
D. all of the above

Solution Video

Question 1567:

What lines can be used to locate the centroid of any quadrilateral?

A. diagonals
B. bimedians
C. midsegments
D. medians

Solution Video

Question 1568:

What is the greatest rectangular area that can be enclosed with a 100 m roll of fencing?

A. $100\ m^2$
B. $250\ m^2$
C. $625\ m^2$
D. $825\ m^2$

Solution Video

Question 1569:

Determine the area of the shaded region.

A. 60 cm^2 **C.** 106 cm^2

B. 46 cm^2 **D.** 75 cm^2

Solution Video

Question 1570:

A sphere has a diameter of 10 cm. Both the diameter and the height of a cone are 10 cm. A cube has a side length of 10 cm. Both the side length and the height of a square-based pyramid are 10 cm. Which shape has the least volume?

A. sphere **C.** cone

B. cube **D.** pyramid

Solution Video

Question 1571:

For a given volume, the cylinder with the least surface area occurs when:

A. radius = height

B. radius = height ÷ 2

C. diameter = height

D. 2(diameter) = height

Solution Video

Chapter 9 Appendix Topics

Powers

Accompanying lectures for questions 1572 - 1581

Question 1572: Write the product represented by each power. Then, evaluate the expression.

2^2

Solution Video

Question 1573: Write the product represented by each power. Then, evaluate the expression.

2^3

Solution Video

Question 1574: Write the product represented by each power. Then, evaluate the expression.

2^4

Solution Video

Question 1575: Write the product represented by each power. Then, evaluate the expression.

3^2

Solution Video

Question 1576: Write the product represented by each power. Then, evaluate the expression.

10^3

Solution Video

Question 1577: Write the product represented by each power. Then, evaluate the expression.

10^4

Solution Video

Question 1578: Write the product represented by each power. Then, evaluate the expression.

4^2

Solution Video

Question 1579: Write the product represented by each power. Then, evaluate the expression.

4^3

Solution Video

Question 1580: Write the product represented by each power. Then, evaluate the expression.

5^3

Solution Video

Question 1581: Write the product represented by each power. Then, evaluate the expression.

5^5

Solution Video

Order of Operations

Accompanying lectures for questions 1582 - 1585

Question 1582: Evaluate using the rules for order of operations.

$(3 + 6 \div 3)^2$

Solution Video

Question 1583: Evaluate using the rules for order of operations.

$4\left(2^3 - 3 \times 2\right)$

Solution Video

Question 1584: Evaluate using the rules for order of operations.

$2\left(3^2 + 1\right) \div 5$

Solution Video

Accompanying lectures for questions 1582 - 1585

Question 1585: Evaluate using the rules for order of operations.

$(9+1)^3 \div \left(3^2+1\right)$

Solution Video

Accompanying lectures for questions 1586 - 1587

Question 1586: Evaluate using the rules for order of operations.

$[(8 + 6 \div 3) - 5]^2$

Solution Video

Question 1587: Evaluate using the rules for order of operations.

$4\left[\left(32 - 5^2\right) - \left(2^3 - 1\right)\right]$

Solution Video

Sum of Integers

Accompanying lectures for questions 1588 - 1593

Question 1588: Represent each operation using integer counters or a number line.

$-6 + (-3)$

Solution Video

Question 1589: Represent each operation using integer counters or a number line.

$5 + (-2)$

Solution Video

Question 1590: Represent each operation using integer counters or a number line.

$-23 + 8$

Solution Video

Question 1591: Determine each sum.

$-3 + (-2)$

Solution Video

Question 1592: Determine each sum.

$2 + (-3)$

Solution Video

Question 1593: Determine each sum.

$-40 + (-15)$

Solution Video

Accompanying lectures for questions 1594 - 1599

Question 1594: Represent each operation using integer counters or a number line.

$5 - (-4)$

Solution Video

Question 1595: Determine each difference.

$4 - (-3)$

Solution Video

Question 1596: Determine each difference.

$-5 - (-2)$

Solution Video

Question 1597: Determine each difference.

$5 - (-13)$

Solution Video

Question 1598: Determine each difference.

$-14 - (-7)$

Solution Video

Question 1599: Determine each difference.

$6 - (-6)$

Solution Video

Accompanying lectures for questions 1600 - 1601

Question 1600: Represent each operation using integer counters or a number line.

$-20 - 16$

Solution Video

Question 1601: Represent each operation using integer counters or a number line.

$-9 - 6$

Solution Video

Accompanying lectures for questions 1602 - 1604

Question 1602: Determine each sum.

$-18 + 8$

Solution Video

Question 1603: Determine each sum.

$-6 + 4$

Solution Video

Question 1604: Determine each difference.

$-43 - 4$

Solution Video

Accompanying lectures for questions 1605 - 1605

Question 1605: Determine each sum.

$32 + (-46)$

Solution Video

Product of Integers

Accompanying lectures for questions 1606 - 1610

Question 1606: Represent each operation using integer counters or a number line.

-2×5

Solution Video

Question 1607: Represent each operation using integer counters or a number line.

$-5 \times (-4)$

Solution Video

Question 1608: Calculate each quotient.

$-30 \div (-15)$

Solution Video

Question 1609: Evaluate.

$(-5)(-5)$

Solution Video

Question 1610: Evaluate.

$-56 \div 8$

Solution Video

Accompanying lectures for questions 1611 - 1614

Question 1611: Represent each operation using integer counters or a number line.

$3 \times (-6)$

Solution Video

Question 1612: Calculate the product.

(-3)(2)

Solution Video

Question 1613: Calculate the product.

(4)(-3)

Solution Video

Question 1614: Calculate the product.

(-2)(7)

Solution Video

Accompanying lectures for questions 1615 - 1617

Question 1615: Represent each operation using integer counters or a number line.

$-6 \times (-9)$

Solution Video

Question 1616: Calculate the product.

(-4)(-9)

Solution Video

Question 1617: Calculate the product.

(-7)(-3)

Solution Video

Accompanying lectures for questions 1618 - 1618

Question 1618: Calculate the product.

(5)(4)

Solution Video

Accompanying lectures for questions 1619 - 1622

Question 1619: Evaluate.

$(-2)(5)(-4)$

Solution Video

Question 1620: Evaluate.

$(8)(4) \div (-2)$

Solution Video

Question 1621: Evaluate.

$(4)(81) \div (-27)(-2)$

Solution Video

Question 1622: Evaluate.

$64 \div [(-4)(-4)(-4)]$

Solution Video

Operations with Integers

Sum and Difference of Fractions

Accompanying lectures for questions 1623 - 1626

Question 1623: Represent each operation using a grid, fraction strips, or a number line.

$$\frac{3}{4}+\frac{1}{5}$$

Solution Video

Question 1624: Evaluate.

$$\frac{3}{4}+\frac{3}{10}$$

Solution Video

Question 1625: Evaluate.

$$\frac{2}{5}+\frac{6}{7}$$

Solution Video

Question 1626: Evaluate.

$$\frac{7}{2} + \frac{3}{5}$$

Solution Video

Accompanying lectures for questions 1627 - 1631

Question 1627: Represent each operation using a grid, fraction strips, or a number line.

$$\frac{2}{9}+\frac{5}{9}$$

Solution Video

Question 1628: Represent each operation using a grid, fraction strips, or a number line.

$$\frac{3}{8}+\frac{1}{8}$$

Solution Video

Question 1629: Add.

$$\frac{1}{7}+\frac{3}{7}$$

Solution Video

Question 1630: Add.

$$\frac{2}{9} + \frac{5}{9}$$

Solution Video

Question 1631: Add.

$$\frac{3}{8} + \frac{1}{8}$$

Solution Video

Accompanying lectures for questions 1632 - 1637

Question 1632: Represent each operation using a grid, fraction strips, or a number line.

$$\frac{1}{3}+\frac{1}{9}$$

Solution Video

Question 1633: Add.

$$\frac{1}{3}+\frac{1}{9}$$

Solution Video

Question 1634: Add.

$$\frac{1}{3}+\frac{1}{6}$$

Solution Video

Accompanying lectures for questions 1632 - 1637

Question 1635: Add.

$$\frac{1}{3} + \frac{5}{12}$$

Solution Video

Question 1636: Subtract.

$$\frac{7}{15} - \frac{2}{5}$$

Solution Video

Question 1637: Subtract.

$$\frac{1}{3} - \frac{1}{6}$$

Solution Video

Accompanying lectures for questions 1638 - 1639

Question 1638: Subtract.

$\frac{5}{9} - \frac{1}{9}$

Solution Video

Question 1639: Subtract.

$$\frac{14}{15} - \frac{7}{15}$$

Solution Video

Accompanying lectures for questions 1640 - 1644

Question 1640: Subtract.

$$\frac{5}{6} - \frac{3}{8}$$

Solution Video

Question 1641: Subtract.

$$\frac{3}{4} - \frac{1}{6}$$

Solution Video

Question 1642: Evaluate.

$$\frac{4}{3} - \frac{2}{11}$$

Solution Video

Question 1643: Evaluate.

$$\frac{8}{15} - \frac{1}{16}$$

Solution Video

Question 1644: Evaluate.

$$\frac{14}{5} - \frac{5}{7}$$

Solution Video

Operations with Fractions

Product of Decimals

9.16 Angles

Accompanying lectures for questions 1645 - 1648

Question 1645: Find the measure of each unknown angle.

Solution Video

Question 1646: Find the measure of each unknown angle.

Solution Video

Question 1647: Find the measure of each unknown angle.

Solution Video

Accompanying lectures for questions 1645 - 1648

Question 1648: Find each missing measure.

Solution Video

Accompanying lectures for questions 1649 - 1652

Question 1649: Find the measure of each unknown angle.

Solution Video

Question 1650: Find the measure of each unknown angle.

Solution Video

Question 1651: Find each missing measure.

Solution Video

Accompanying lectures for questions 1649 - 1652

Question 1652: Find each missing measure.

Solution Video

Accompanying lectures for questions 1653 - 1654

Question 1653: Find the measure of each unknown angle.

Solution Video

Question 1654: Find the measure of each unknown angle.

Solution Video

Accompanying lectures for questions 1655 - 1655

Question 1655: Find the measure of each unknown angle.

Solution Video

Accompanying lectures for questions 1656 - 1656

Question 1656: Find each missing measure.

Solution Video

Expanded Form and Scientific Notation

Patterns and Relationships

The Cartesian Coordinate System

Equations

Accompanying lectures for questions 1657 - 1660

Question 1657: Solve.

n+3 = 7

Solution Video

Question 1658: Solve.

n + 3 = 7

Solution Video

Question 1659: Solve.

9= 3+x

Solution Video

Accompanying lectures for questions 1657 - 1660

Question 1660: Solve.

9+g =3

Solution Video

Accompanying lectures for questions 1661 - 1662

Question 1661: Solve.

n-4= 7

Solution Video

Question 1662: Solve.

z- 2 =13

Solution Video

Accompanying lectures for questions 1663 - 1668

Question 1663: Solve.

$2x = 6$

Solution Video

Question 1664: Solve.

$3n = 18$

Solution Video

Question 1665: Solve.

$4c = -16$

Solution Video

Question 1666: Solve.

$-4m = 20$

Solution Video

Question 1667: Solve.

$-30 = 6h$

Solution Video

Question 1668: Solve.

$-25 = -5a$

Solution Video

Ratio and Rates