LaPIS Diagnostic Test Workbook - Mathematics

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Class	:	7
Section	:	C
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Chasmitha P's Performance Report

Bar chart — Topic wise Performance (Percentage of fluency):
- Geometry: 40.0
- Mensuration: 100.0
- Number system: 54.5
- Algebra: 50.0
- Comparing Quantities: 80.0
- Data handling: 25.0
- Basic arithmetic: 100.0
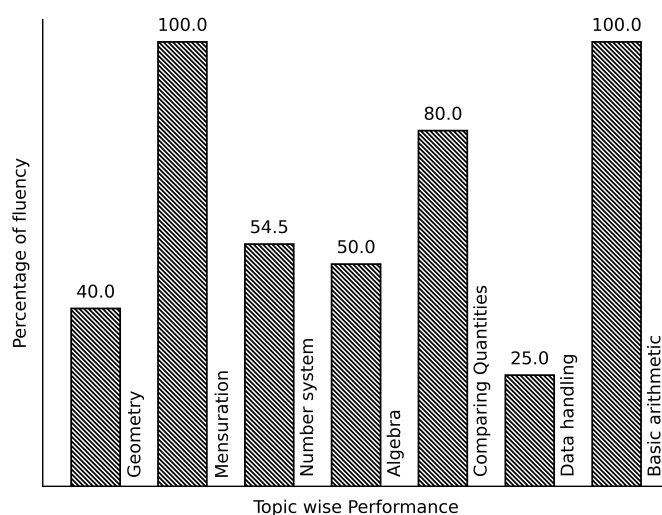
Score: 22/40   **Percentage: 55.0%**

Chasmitha P's Study Planner

Date	Topics Planned	Q. Numbers	Teacher Remark	Teacher Sign	Parent Sign

Teacher's Feedback to Student

_____   _____

Class Teacher Signature   Principal Signature

Data handling

Topics to be Improved	
Arithmetic mean, mode and median	Mean, Median and Mode
Chance of probability	Sample space in probability, Basis of probability

Hi, here in this video you will learn **Mean, Median, Mode**

Question: 1 ....

Find the mode of the following data: 5, 15, 23, 5, 32, 44, 72, 55, 6, 3, 5, 65, 45, 67, 24, 19 and 98.

Answer:

Mode is the number that occurs _____ (frequently / rarely) in a given list of observations.
Arranging the data in ascending order: _____
_____ occurs most number of times. Then, mode of the given data is _____

Question: 2 ....

Which shape contains median of the given data 3, 5, 6, 2, 7, 9, 6, 4 and 1
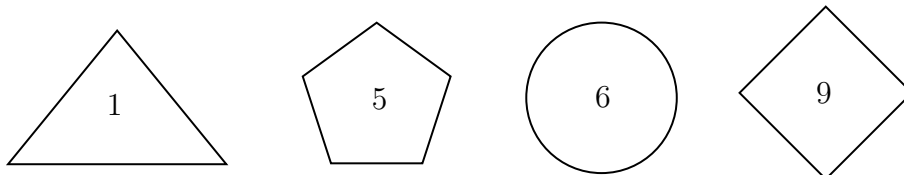
Answer:

Median is the _____(first/central/last) value of a data when the data is arranged in ascending or descending order.
Arrange the given data in ascending order : _____
Central value of the given data is _____ and it is the _____ of a data.

Question: 3 ....

Marks scored	100	90	80	70
Number of students	4	5	2	1

Mean = _____ , Median = _____ and Mode = _____.

Answer:

Mean = $\dfrac{\rule{3cm}{0.4pt} \text{ of all observation}}{\text{number of observation}}$.

Here s sum of all observation = _____ , number of observation = _____
Therefore, mean = _____
Arrange the data in ascending order : _____
Here, median = _____ , mode = _____.

Hi, here in this video you will learn **Basics of probability**

Question: 4 ....

Which of the following contains list of all possible outcomes.

| Probability | Sample space | Sure events | Impossible events |

Answer:

Probability is the measure of _____ (chance /number) of an events happenings.
Sample space consists of _____ (possible/ impossible) outcomes.
Sure events always _____ (occurs/don't occurs).
Impossible events _____ (occurs/ don't occurs).
Therefore, _____ contains list of possible outcomes.

Question: 5 ....

Write the possible outcomes while spinning the given wheel.
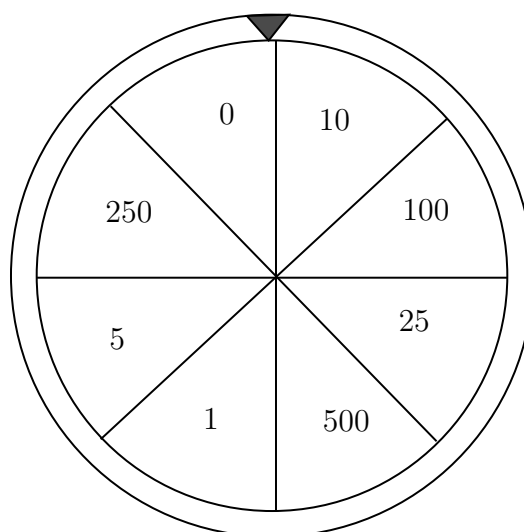
Answer:

Outcomes are _____ (possible/impossible) results of an experiment.
The possible outcomes while spinning wheel are ₹0, ₹10, _____

Question: 6 ....

A bag contains three balss of colour blue, green and red. Write the possible outcomes if two balls are taken out.

Answer:

A bag contains _____, _____ and _____ balls.
If one of the ball is blue in colour, then other ball can be _____ or _____
If one of the ball is green in colour, then other ball can be _____ or _____.
If one of the ball is red in colour, then other ball can be _____ or _____.
Therefore, if two balls are taken out then possible outcomes are blue + _____ ,
_____ + _____, _____ + _____,

_____

Hi, here in this video you will learn **Basics of probability**

_____

Question: 7 ....

Identify the sure events and impossible events

  (i) The sun rises in the west.

 (ii) Water is colourless.

(iii) Clock rotates in clock wise direction.

 (iv) Ball is square in shape.

Answer:

Events that always occur are called _____ (sure/ impossible) events.
Events that cannot occur are called _____ (sure/ impossible) events.
Here, The sun rises in the west is _____ event. Water is colourless is _____ event.
Clock rotates in clock wise direction is _____ event. Ball is square in shape is _____ event.

Question: 8 ....

Probability of sure events is _____ (greater / smaller) than probability of impossible events.

Answer:

Probability of sure event = _____(0/ 1/ any number).
Probability of impossible event = _____ (0/ 1/ any number).
Therefore, Probability of sure event _____ Probability of impossible event.

Question: 9 ....

Raju has pencil, an eraser, a scale, sharpener, colour pencil and protractor in his box. What is the probability of getting a pen from his box.

Answer:

Things Raju have _____

Does Raju have pen in his box,_____ (Yes/ No).

Then probability of getting pen from his box is _____ (0/1)

Geometry

Topics to be Improved	
Right angle triangle and pythagoras property	Basics of Pythagoras property
Types of triangle	Basics of types of triangle (sides)
Transversal angle made by transversal	Basics of Transversal angle
Faces vertex and edges	Idenfication of faces,edges and vertices
Angle sum property of triangle	Angle sum property of triangle
Related angles	Basic of angles

Hi, here in this video you will learn **Pythagoras property**

Question: 10 ....

In a right angled triangle, square of the _____ = sum of the squares of the legs.

Answer:

Pythagoras theorem is only applicable for _____ triangle.
Longest side of the triangle is _____ (hypotenuse/ legs) and other two sides are called
_____(hypotenuse/ legs).
Pythagoras theorem states that _____.

Question: 11 ....

Find the hypotenuse of the triangle ABC if base is 12 m and altitude is 5 m.

Answer:
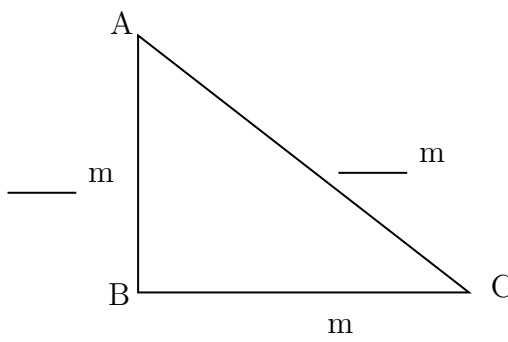
Pythagoras theorem states that square of the _____ = sum of the squares of its
_____.

Given: Base = _____, Altitude = _____,

Base and altitude are _____ (hypotenuse/ legs) of the triangle.

By Pythagoras theorem, (_____)^2 = (_____)^2 + (_____)^2

_____ = _____ + _____

Therefore, hypotenuse of the triangle is _____.

Question: 12 ....

Find the length of the rectangle, if breadth is 3 cm and diagonal is 5 cm.

Answer:

_____ cm

_____ cm
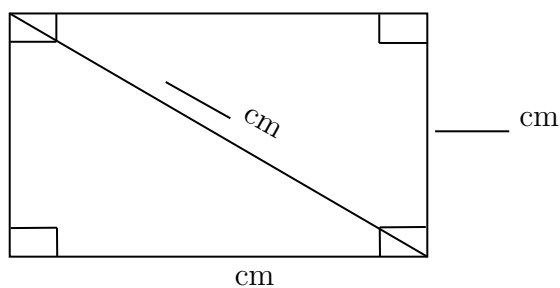
Pythagoras theorem states that square on the _____ = sum of the squares on
_____.

Is Pythagoras theorem applicable in rectangle? ____ (yes/ no).

Given: breadth = _____, length of diagonal = _____

By Pythagoras theorem, (_____)^2 = (_____)^2 + (_____)^2

_____ = _____ + _____

Therefore, diagonal of the rectangle is _____

Hi, here in this video you will learn **Types of triangle**

Question: 13 ....

Polygon with three sides is called as _____.

Answer:

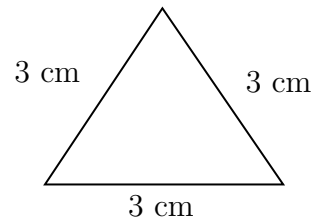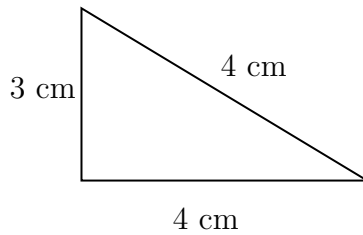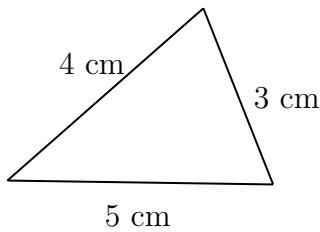A polygon is a simple _____ (open / closed) curve made up of only line segments.

Polygon with three sides is called _____.

Draw a diagram of polygon with three sides :

Question: 14

Identify the types of triangles.

Triangle 1: sides 4 cm, 3 cm, 5 cm

Triangle 2: sides 3 cm, 4 cm, 4 cm

Triangle 3: sides 3 cm, 3 cm, 3 cm

Answer:

Triangle has _____ sides.

- Triangle with all sides are equal is called _____ triangle.

- Triangle with two sides of equal length is called _____ triangle.

- Triangle with three sides of different length is called _____ triangle.

Question: 15

A park is in the shape of an isosceles triangle. If side length of the park is 30ft and 60ft. then the possible length of third side of park can be _____.

Answer:

The shape of the park is _____ .
The shapes has _____ sides and this shape has _____ sides of equal length.
Given: length of sides of park is _____.
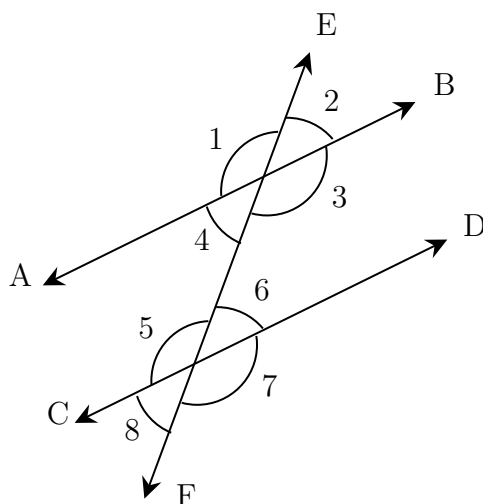The possible length of third side is _____.

Hi, here in this video you will learn **Basics of Transversal angle**

Question: 16

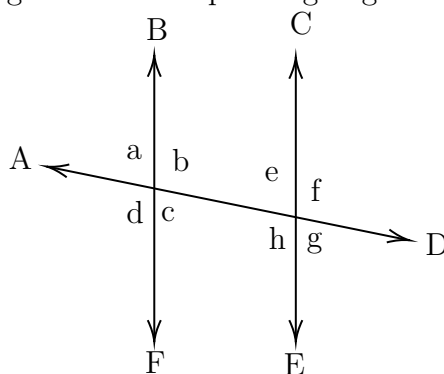In given diagram, ∠ 1 and ∠ 7 are _____ (alternate / corresponding) angles.

Answer:

A line that intersects two or more lines at distinct points is called a _____ (transversal/ Intersecting line).

Angle that lies on different vertices and on the opposite sides of transversal is _____ angles.

Angle that lies on different vertices and on the same sides of transversal is _____ angles.

Therefore, ∠1 and ∠7 are _____

Question: 17 . . . .

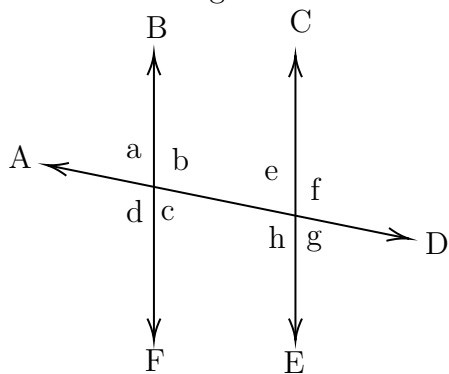Find the transversal, alternate angles and corresponding angles in a given diagram.

Answer:

A line that intersects two or more lines at distinct points is called a _____ (transversal/ Intersecting line).

In a given diagram, _____ is a transversal line. (BF/AD/CE)

Alternate angles	Corresponding angles
∠a and ∠g , ∠b and ∠h,	∠a and ∠e, ∠b and ∠f,

Question: 18   ....

Find ∠e and ∠g if ∠a = 30°.

Answer:

When parallel lines cut by a transversal,

   (i) Alternate angles are ⎯⎯⎯⎯⎯⎯⎯ (equal / not equal).

   (ii) Corresponding angles are ⎯⎯⎯⎯⎯⎯⎯ (equal / not equal).

Here, alternate angle of ∠a is ⎯⎯⎯⎯⎯⎯⎯ and its value is ⎯⎯⎯⎯.
Corresponding angle of ∠a is ⎯⎯⎯⎯⎯⎯⎯ and its value is ⎯⎯⎯⎯.

Hi, here in this video you will learn **Basics of 3D model**

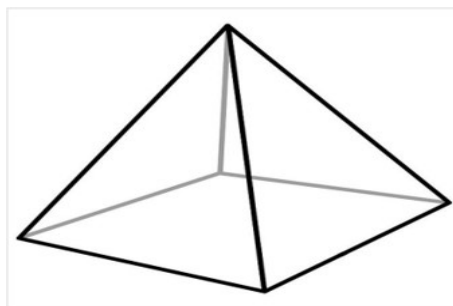***Question: 19***   ....

A point at which two or more lines segments meet is called ⎯⎯⎯⎯⎯⎯⎯⎯(Vertex/ edges/ faces).

Answer:

⎯⎯⎯⎯⎯⎯⎯⎯ has two end point (line/line segment/ray).
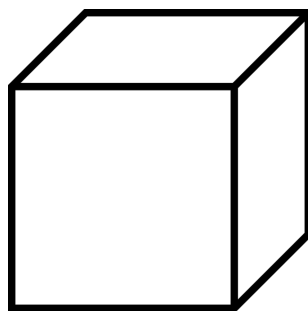A ⎯⎯⎯⎯⎯⎯⎯is a point where two or more line segments meet(Vertex/ edges/ faces).
Mark the vertices in the diagram,

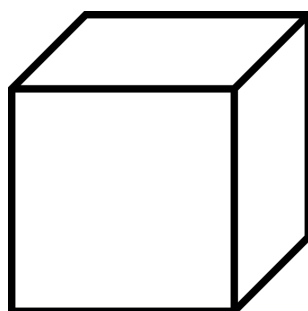***Question: 20***   ....

Mark and find the number of vertices, edges and faces in a cube.

Answer:

Mark the vertex, edges and faces in a cube.

Count the number of vertex, edges and faces in a cube.
Cube have _____ vertices, _____ edges and _____ faces.

Question: 21 . . . .

How many vertices, edges and faces does dices have?

Answer:

The shape of dice is _____.
Dices have _____ vertices, _____ edges and _____ faces.

Hi, here in this video you will learn **Angle sum property**

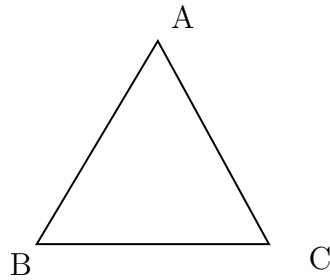*Question: 22* . . . .

Sum of the angles of triangle is _____.

Answer:

A

$\angle A \ + \ \angle B \ + \ \angle C \ =$ _____

B   C
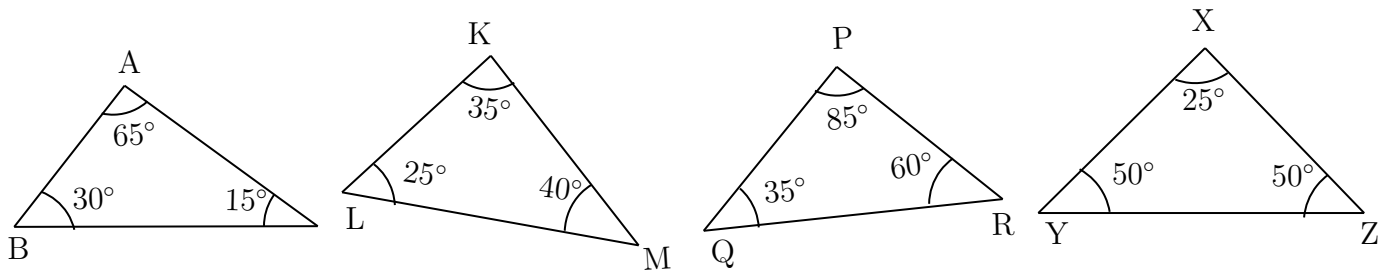
Angle sum formula $= (n-2) \times 180°$, $n =$ number of sides
Triangle has _____ sides.
Sum of the angles of triangle $= ($_____$- 2) \times 180° =$ _____

Question: 23 ....

Which of the following triangle satisfy the angle sum property.

A
65°
30°   15°
B

K
35°
25°   40°
L   M

P
85°
35°   60°
Q   R

X
25°
50°   50°
Y   Z

Answer:

Angle sum property of triangle: sum of the angles of a triangle is _____
In $\triangle ABC$, Sum of the angles $= \angle A + \angle B + \angle C =$ _____ $=$ _____
In $\triangle PQR$, Sum of the angles $=$ _____ $=$ _____ $=$ _____
In $\triangle KLM$, Sum of the angles $=$ _____ $=$ _____ $=$ _____
In $\triangle XYZ$, Sum of the angles $=$ _____ $=$ _____ $=$ _____
Therefore, the triangles that satisfy the angle sum property are $=$ _____

Question: 24 ....

Find the angles of triangle, if their angles are in the ratio 8:6:4.

Answer:

Ratio of angles in the triangle is _____
Let's consider the angles of triangle be $8x$, ____ and ____
We know sum of the angles of a triangle is ____
Therefore, $8x+$ ____ $+$ ____ $= 180°$. The value of $x =$ _____
The angles of the triangle are _____

___

Question: 25 ....

   (i) When two rays of an angle are perpendicular, then the angle formed between them is a
   _____ angle .

   (ii) When two rays of an angle are in opposite sides, then the angle formed between them is a
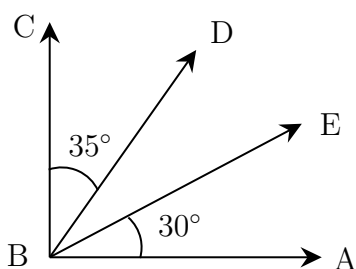   _____ angle .

Answer:

A _____ (line segment /ray) begins from one point and travels endlessly in a direction.

   (i) The angle formed between two perpendicular rays is ___° and it is called _____
   angle.

   (ii) If two rays starting at same point moves in opposite direction, they form a _____
   (straight / perpendicular) line. The measure of the angle formed is ___°and it is called
   _____ angles.

Question: 26 ....

Find the angle of $\angle DBE$

Answer:

BA and BC are _____ (parallel / perpendicular) rays.
The angle formed between this rays is ___, $\angle ABC =$ ___.

$$\angle ABC = \angle ABE + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$
$$= 30° + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$
$$= \underline{\hspace{1cm}}$$

Therefore, $\angle DBE = \underline{\hspace{1cm}}$

Question: 27 ....

Find the complementary angles in the given diagram.

___
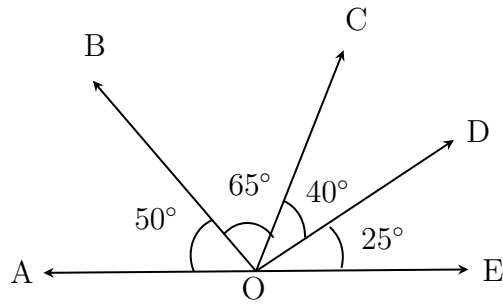
Answer:

Two angles are said be complementary if sum of their angles is equal to _____.

∠AOB= _____, and its complement angle is _____.

∠BOC = _____, and its complement angle is _____.

∠COD = _____, and its complement angle is _____.

∠DOE = _____, and its complement angle is _____.

Therefore, in the given figure the complementary angles are ∠AOB, _____ and ∠BOC, _____

Number system

| Topics to be Improved	
Fractions	Division of fraction
Introduction to rational numbers	Basics of rational numbers
Operations on rational numbers	Division of rational numbers
Integers	Basics of integers
Exponents	Solving exponents

Hi, here in this video you will learn **Division on fractions**

Question: 28 ....

Find the shape which contains the improper fraction of $5\frac{2}{7}$.

$$\boxed{\frac{10}{35}} \qquad \triangle\frac{10}{7} \qquad \bigcirc\frac{37}{7} \qquad \pentagon\frac{32}{7}$$
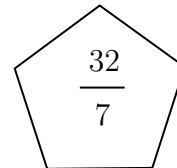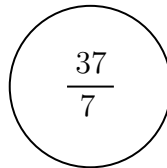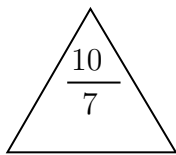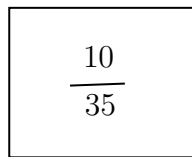
Answer:

$5\frac{2}{7}$ is a _____ (proper/mixed) fraction.

Here, 5 is _____ , 2 is _____ and 7 is _____ .

To convert mixed fraction into improper fraction, $\frac{(\text{ Whole} \times \underline{\hspace{2cm}})+\text{Numerator}}{\text{Denominator}}$

$$5\ \frac{2}{7} \ = \frac{(\ \underline{\quad} \times \underline{\quad}\ ) + \underline{\quad\quad}}{7} \ = \frac{\square}{\square}$$

Question: 29 ....

Solve: $\frac{1}{3} \div \frac{14}{3}$

Answer:

To divide a fraction by another fraction, multiply the dividend by _____ (same / reciprocal) of the divisor. Here, dividend = _____ and divisor = _____ .

$$\frac{1}{3} \div \frac{14}{3} = \frac{1}{3} \times \frac{\Box}{\Box} = \frac{\Box}{\Box}$$

Question: 30 ....

Find the half of the fraction $\frac{12}{40}$.

Answer:

To find half of a number, divide the number by _____

$$\frac{12}{40} \div \text{\_\_\_\_\_} = \frac{12}{40} \times \frac{\Box}{\Box} = \frac{\Box}{\Box}$$

Then the answer is _____

Hi, here in this video you will learn **Basics of rational numbers**

Question: 31 ....

The numbers in the diagram represents_____.
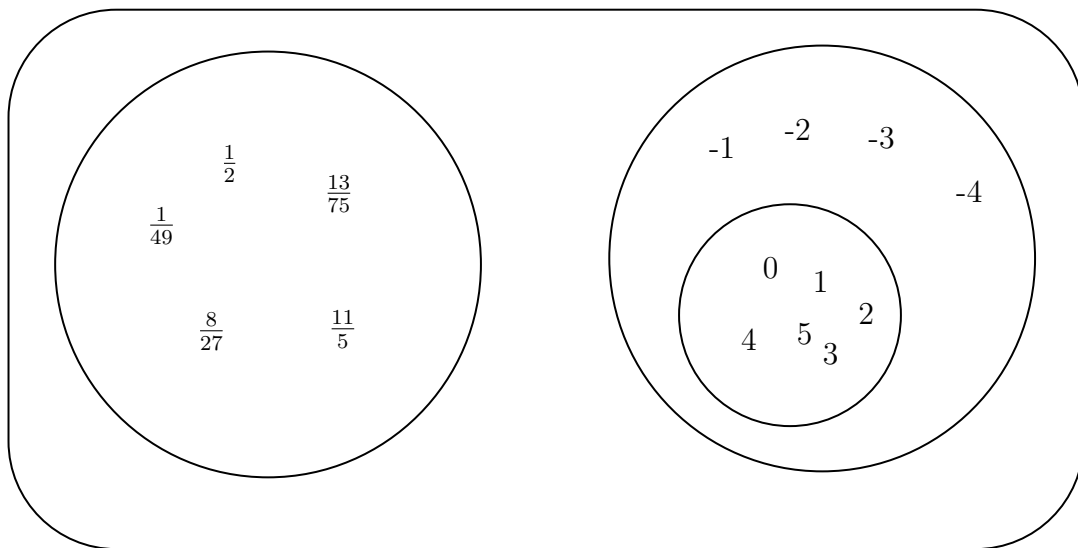
Answer:

0, 4,5,2,3,1 are _____ numbers.

-1,-2, -3, -4 are _____ numbers.

The combination of these circles are called _____.

$\frac{1}{49}, \frac{1}{2}, \frac{8}{27}, \frac{11}{5}, \frac{13}{75}$ are _____.

Combination of all three circles are called as _____ numbers.

Question: 32 ....

Shade the correct form of rational numbers.
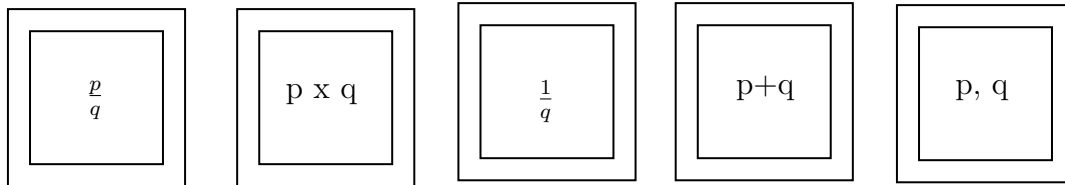
$\frac{p}{q}$	p x q	$\frac{1}{q}$	p+q	p, q

Answer:

Rational number can be expressed as _____, where both numerator and denominator are _____ (integer/ not a integer),
denominator is equal to _____(zero/ one/ any integer other than zero).

Question: 33 ....

Circle the number which is not a rational number.

$$\frac{-5}{-8} \qquad \frac{-3}{2} \qquad \frac{12}{-6} \qquad \frac{0}{-9} \qquad 256 \qquad \frac{4}{0}$$

Answer:

Rational number can be expressed as _____, where both numerator and denominator are _____(integer/ not a integer),denominator is equal to _____ (zero/ one/ any integer other than zero).
Here, _____ is/are rational number and _____ is/are not a rational number.

Hi, here in this video you will learn **Operation on rational numbers**

Question: 34 ....

Fill in the boxes to make the given expression correct.

$$\frac{1}{5} \div \frac{14}{15} = \frac{1}{\Box} \times \frac{\Box}{\Box}$$

Answer:

When any fraction is divided by a fraction, we multiply the dividend by the _____ (same/reciprocal) of the divisor.

Here, dividend = _____ and divisor = _____

$$\frac{1}{5} \div \frac{14}{15} = \frac{1}{\Box} \times \frac{\Box}{\Box} = \frac{\Box}{\Box}$$

Question: 35 ....

Solve: $\frac{18}{7} \div 0.6$

Answer:

Fraction form of 0.6 = _____,
when any fraction is divided by a fraction, we multiply the dividend by the _____
(same/reciprocal) of the divisor. Here, dividend = _____ and divisor = _____.

$$\frac{18}{7} \div \frac{\Box}{\Box} = \frac{18}{7} \times \frac{\Box}{\Box} = \frac{\Box}{\Box}$$

Question: 36 ....

Find the missing number in the expression $\dfrac{8}{3} \div \dfrac{16}{\Box} = 2$

Answer:

$$\frac{8}{3} \div \frac{16}{\Box} = 2$$

$$\frac{8}{3} \times \frac{\Box}{16} = 2$$

Transposing 8/3 to RHS,

$$\frac{\Box}{16} = 2 \ \Box \ \frac{8}{3}$$

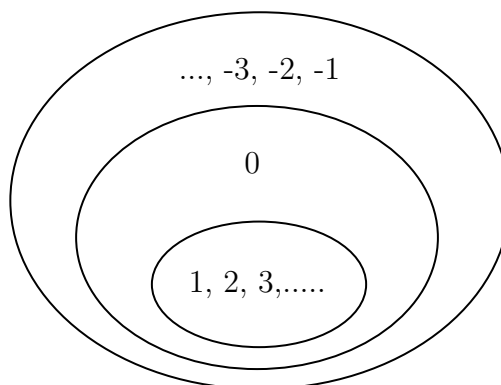$$\frac{\Box}{16} = 2 \times \frac{\Box}{\Box}$$

$$\frac{\Box}{16} = \frac{\Box}{\Box}$$

Transposing 16 to other side, the result is _____.

Hi, here in this video you will learn **Basics of integers**

Question: 37 ....

Highlight the ring that contains whole numbers.

Answer:
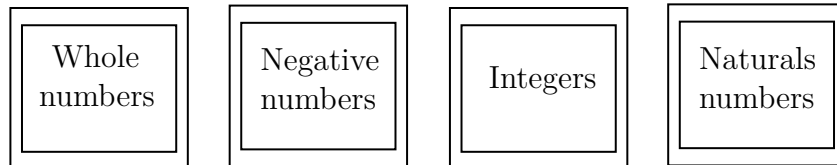
The numbers inside the inner ring (1, 2, 3,....) are _____ numbers.
The numbers inside the middle ring are _____ numbers.
The numbers inside the outer ring are negative numbers, positive numbers and zero and they are called as _____.

Question: 38 ....

Colour the frame of the box which contains the number 1, 4 and -10

Whole numbers	Negative numbers	Integers	Naturals numbers

Answer:

Whole number consists of 0,1,2,3,4,..... Negative number consists of _____.
Natural numbers consists of _____. Integers consists of _____.
Now, 1, 4, -10 are in _____.

Question: 39 ....

State whether the statement is true or false.
        Every positive number is an integer.

Answer:

Positive numbers are _____. Integers consists of _____.
Therefore, positive numbers are _____ (in/not in) integers.

Hi, here in this video you will learn **Exponents and power**

Question: 40 ....

Find the exponential form of 1000.

Answer:

_____ (Exponents/Base) tells us how many times a number should be multiplied by itself to get the desired result.
Exponents is also called as _____ (Base / Power).

$$1000 \text{ can be written as} = 10 \times \underline{\hspace{1cm}} \times \underline{\hspace{1cm}}$$
$$10 \text{ is raised to the power of } \underline{\hspace{0.5cm}} = (10)^{\overline{\hspace{0.5cm}}}$$

Question: 41 ....

Find the value of $(-2)^3$.

Answer:

_____ (Exponents/Base) tells us how many times a number should be multiplied by itself to get the desired result.

$$\text{In this exponential form } (-2)^3 \text{ , base} = \underline{\quad}, \text{ power} = \underline{\quad}.$$
$$(-2)^3 = \underline{\quad} \times \underline{\quad} \times \underline{\quad} = \underline{\quad}.$$

Question: 42 ....

   (i) Tenth power of 100 is $\underline{\quad}$ ($(10)^{100}$ or $(100)^{10}$).

   (ii) k is raised to the power of 5 is $\underline{\quad}$ ($(k)^5$ or $(5)^k$).

Answer:

Exponential form $= (Base)^{\underline{\quad}}$

   (i) Tenth power of 100 : Base $= \underline{\quad}$, Power/Exponents $= \underline{\quad}$, exponential form $= \underline{\quad}$.

   (ii) k is raised to the power of 5 : Base $= \underline{\quad}$, Power/Exponent $= \underline{\quad}$, exponential form $= \underline{\quad}$.

Comparing Quantities

Topics to be Improved	
Conversion of fraction into percentage	Conversion of fraction into percentage

Hi, here in this video you will learn **Converting fraction into percentage**

Question: 43 ....

Complete the box in the given equation.

$$5\% = \frac{5}{\boxed{}}$$

Answer:

Percentage are the fraction with the denominator _____.

Therefore, 5% can be expressed as _____

Question: 44 ....

Mark the correct conversion form of fraction $\frac{1}{2}$ to percentage.

(i) $\frac{1}{2} \times \frac{50}{50} = \frac{50}{100} = 50\%$

(ii) $\frac{1}{2} \times \frac{100}{100} = \frac{100}{200} = 200\%$

(iii) $\frac{1}{2} \times 100 = \frac{100}{2} = 50\%$

Answer:

To convert fraction into percentage, the value of _____ (denominator / numerator)should be 100 or _____ (multiply / divide) the fraction with 100 %.
Therefore, correct conversion form is _____

Question: 45 ....

Find the percentage of shaded part of square.
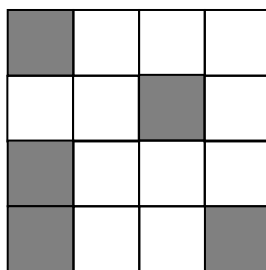
Answer:

The square shape is divided into ＿＿＿＿＿＿ parts.
Number of shaded part of square is ＿＿＿＿＿.

Shaded part of square in fraction is $\dfrac{\Box}{\Box}$

To Convert $\dfrac{\Box}{\Box}$ into percentage , $\dfrac{\Box}{\Box}$ x 100

Algebra

Hi, here in this video you will learn **Subtraction on expression**

Question: 46 ....

Find the sum of two expressions a + b + c and b + c + d

Answer:

The given two expressions are _____ and _____.
The two terms will get added only if they are _____(Like/ Unlike) terms.
The sum of two expressions = _____ + _____.
The answer is _____

Question: 47 ....

	School A	School B
Number of boys	100b	250b
Number of girls	150g	200g
Number of teachers	25t	45t

(i) Total number of boys in school A and B is _____

(ii) Total number of students in school B is _____

(iii) How many more teachers are there in school B than school A ? _____

Answer:

(i) Number of boys in school A = _____,
Number of boys in school B = _____.
Total number of boys in school A and school B is _____ + _____ = _____.

(ii) Number of boys in school B = _____,
Number of girls in school B = _____.
Total number of students in school B is _____ + _____ = _____.

(iii) Number of teachers more in school B than school A = Teachers in school B − Teachers in school A = _____.

Question: 48 ....

Solve the following:

$$13x + \text{\_\_\_}$$
$$(+) \quad 12x + 10y$$
$$\text{\_\_\_} + 25y$$

$$3a - 5b$$
$$(-) \quad 5a - 7b$$
$$-2a - \text{\_\_\_}$$

Answer:

The two terms will get added only if they are _____ (like/unlike) terms.

$$13x + \text{\_\_\_}$$
$$(+) \quad 12x + 10y$$
$$\text{\_\_\_} + 25y$$

$$3a - 5b$$
$$(-) \quad 5a - 7b$$
$$-2a - \text{\_\_\_}$$

Hi, here in this video you will learn **Addition on expression**

Question: 49 ....

Shade the like terms.

3a $3a^2$ 3b 6a 3c 33a 9a

Answer:

Given terms are _____.
Two or more term have _____ (same/ different) variables is called like terms.
Here, like terms are _____.

Question: 50 ....

Complete the expression $7r^2 + r\,\boxed{} - 2\,\boxed{} = \text{\_\_\_}r^2$

Answer:

_____ (Like / Unlike) terms can be added or subtracted.

$$7r^2 + \text{r}\,\boxed{} - 2\,\boxed{} = \left(7 + \underline{} - 2\right)r^2 = \underline{}$$

Question: 51 . . . .

Sam have 3a chocolates and 9y icecream. Ram have 7a chocolates and 5y icecream.

(i) Total chocolates Ram and Sam have : _____.

(ii) How many icecreams Sam have more than Ram : _____ .

Answer:

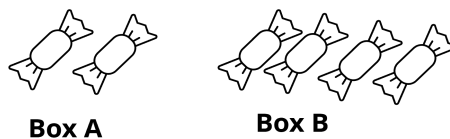|	Chocolates	Icecream
Sam		
Ram		

(i) Total chocolates Ram and Sam have :
Ram's chocolate + Sam's chocolates = _____ + _____ = ___

(ii) How many icecreams Sam have more than Ram :
_____ icecream - _____ icecream = _____ - _____ = _____

Hi, here in this video you will learn **Solving an equation using application**

Question: 52 . . . .

Box A   **Box B**

Box B contains _____ times the number of chocolates in Box A

Answer:

Box A contains _____ chocolates.
Box B contains _____ chocolates.
No. of chocolates in Box B = _____ × (No. of chocolates in Box A)

Question: 53 . . . .

Write the equation for the following statement.
Subtracting four times of m from 4 is n

Answer:

$$\text{Four times of m} = \underline{\hspace{2cm}}$$
$$\text{Subtracting four times of } m \text{ from } 4 = \underline{\hspace{2cm}}$$

The equation is $\underline{\hspace{2cm}}$

Question: 54 $\dotfill$

Compare the given two statements $(<, >, =)$
Sum of $2a$ and 9 $\boxed{}$ Add 9 to the product of a and 2

Answer:

$$\text{Sum of } 2a \text{ and } 9 \ = \underline{\hspace{2cm}}$$
$$\text{Product of } a \text{ and } 2 = \underline{\hspace{2cm}}$$
$$\text{Add } 9 \text{ to the product of } a \text{ and } 2 = \underline{\hspace{2cm}}$$

Therefore, sum of $2a$ and 9 $\boxed{}$ Add 9 to the product of a and 2