# LaPIS Diagnostic Test Workbook - Mathematics

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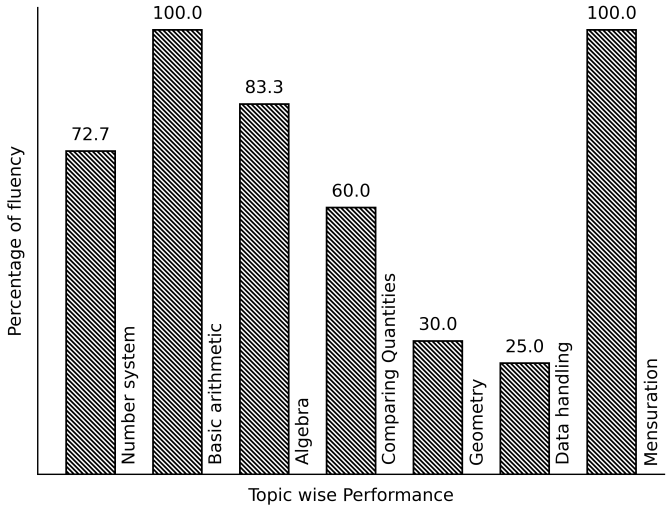
| **Name** | **:** | **Harithra Sree M A** |
| **Class** | **:** | **7** |
| **Section** | **:** | **A** |
| **School** | **:** | **AKV Public School** |
| **Login ID** | **:** | **AKV124** |

## Harithra Sree M A's Performance Report




**Score: 24/40** **Percentage: 60.0%**

# Harithra Sree M A's Study Planner

| Date | Topics Planned | Q. Numbers | Teacher Remark | Teacher Sign | Parent Sign |
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Teacher's Feedback to Student

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Class Teacher Signature

Principal Signature

# Data handling

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

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

***Question: 1*** .....

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: 2*** .....

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: 3*** .....

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)

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

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***Question: 4*** .....

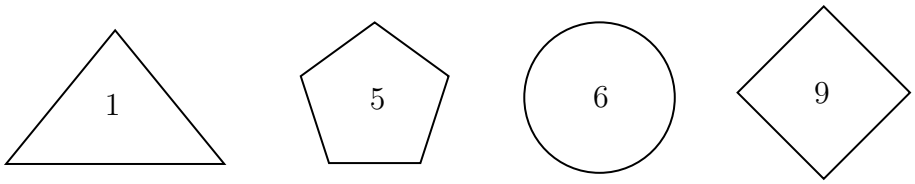
Find the mode of the following data: 5, 15, 23, 5, 32, 44, 72, 55, 6, 3, 5, 65, 45, 67, 24, 19 and 98.

***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: 5*** .....

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: 6*** .....

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

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

***Answer:***

Mean = $\frac{\text{\_\_\_\_\_ of all observation}}{\text{number of obserivation}}$.

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: 7*** .....

Which of the following contains list of all possible outcomes.

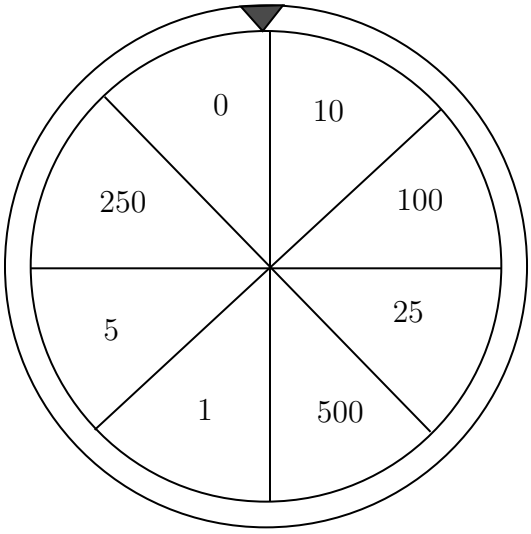
| Probability | Sample space | Sure events | Impossible events |
|---|---|---|---|

***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: 8*** .....

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: 9*** .....

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 + _____ ,
_____ + _____, _____ + _____,

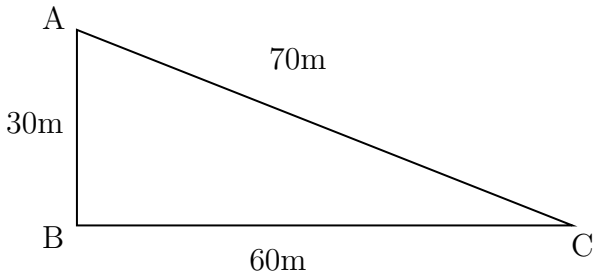
# Geometry

| Topics to be Improved | |
|---|---|
| **Sum of lengths of two sides of a triangle** | Sum of two sides of a triangle |
| **Related angles** | Basic of angles, Complementary angles |
| **Transversal angle made by transversal** | Basics of Transversal angle |
| **Lines of symmetry for regular polygons** | Identification of lines of symmetry |
| **Right angle triangle and pythagoras property** | Basics of Pythagoras property |
| **Types of triangle** | Basics of types of triangle (sides) |

Hi, here in this video you will learn **Sum of the length of sides of the triangle**

***Question: 10*** .....

Find the greatest distance to reach C from A in the given diagram.




***Answer:***

The sides of the given triangle are _____.
The possible way to reach point C from point A are _____ and AB then to _____
Side AC = _____
Side AB + BC = _____ + _____ = _____
Therefore, the greatest distance to reach C from A in the given diagram is _____.

***Question: 11*** .....

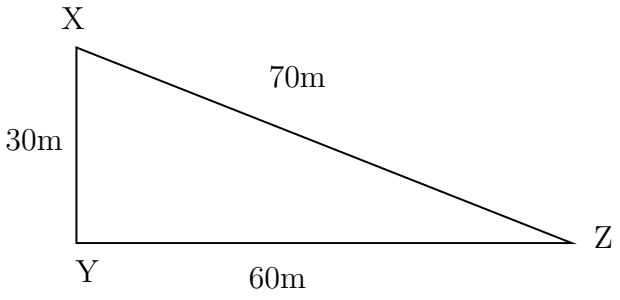
_____ (Sum of / Difference between) the length of any two sides of a triangle is smaller than the length of the third side.

***Answer:***

There are _____ sides in a triangle.
The sum of the two sides of a triangle is _____ than the other side of the triangle.
The difference of the two sides of a triangle is _____ than the other side of the triangle.
Example: In triangle XYZ,

XY + YZ ☐ XZ (<,>, =)

YZ - XY ☐ XZ (<, >, =)




***Question: 12*** .....

The lengths of two sides of a triangle are 7 cm and 10 cm. Between which two numbers can length of the third side fall?

***Answer:***

1. The sum of the two sides of a triangle is _____ than the third side of the triangle.
   Therefore, the third side should be _____(less/ greater) than sum of other two sides.
   Here, sum of the two sides = _____ + _____ = _____
   Therefore, the length of the third side is less than _____
2. The difference of the two sides of a triangle is _____ than the third side of the triangle.
   Therefore, the third side should be _____(less/ greater) than sum of other two sides.
   Here, difference of the two sides = _____ - _____ = _____
   Therefore, the length of the third side is greater than _____

Therefore, length of the third side is greater than _____ but less than _____.

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Hi, here in this video you will learn **Related Angles**

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***Question: 13*** .....

(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:***

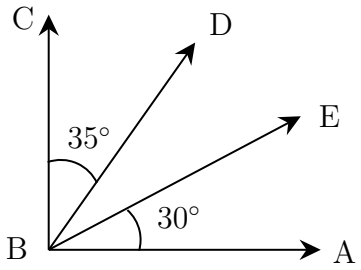
A _____ ( line segment /ray ) begins from one point and travels endlessly in a direction.

(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: 14*** .....

Find the angle of $\angle DBE$




***Answer:***

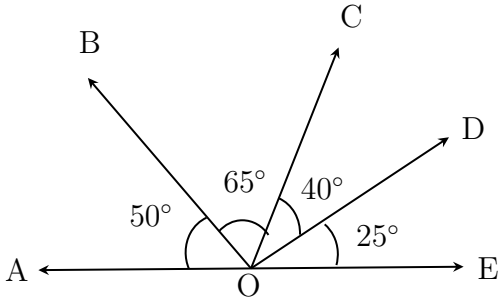
BA and BC are _____ ( parallel / perpendicular) rays.
The angle formed between this rays is ___, $\angle ABC =$ ___.

$$\begin{aligned} \angle ABC &= \angle ABE + \_\_\_\_\_ + \_\_\_\_\_ \\ &= 30° + \_\_\_\_\_ + \_\_\_\_\_ \\ &= \_\_\_\_\_ \end{aligned}$$

Therefore, $\angle DBE =$ _____

***Question: 15*** .....

Find the complementary angles in the given diagram.




***Answer:***

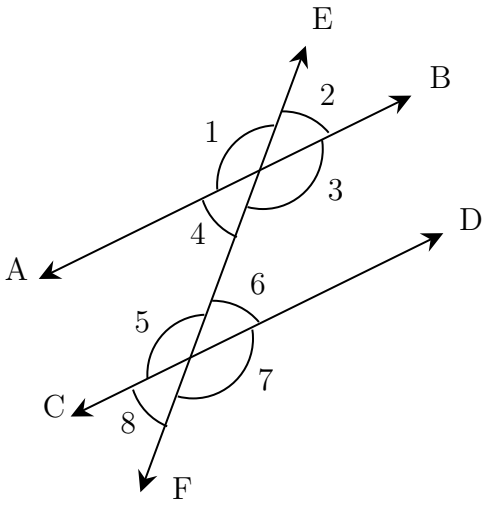
Two angles are said be complementary if sum of their angles is equal to _____.

$\angle AOB$= _____, and its complement angle is _____.
$\angle BOC$ = _____, and its complement angle is _____.
$\angle COD$ = _____, and its complement angle is _____.
$\angle DOE$ = _____, and its complement angle is _____.
Therefore, in the given figure the complementary angles are $\angle AOB$, _____ and $\angle BOC$, _____

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

***Question: 16*** .....

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

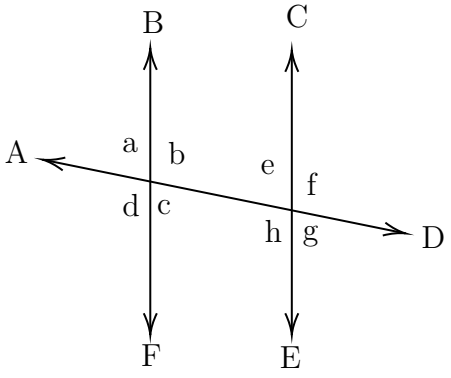



***Answer:***

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, $\angle$1 and $\angle$7 are _____

***Question: 17*** .....

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



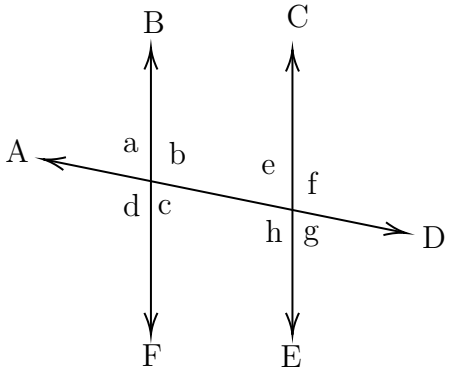
***Answer:***

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 _____.

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Hi, here in this video you will learn **Related Angles**

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

1. Two angles are complementary if their sum is equal to _____.
2. Two angles are supplementary if their sum is equal to _____.

***Answer:***

1. When sum of the two angles is equal to 90°, they are called as _____ angle.
   Example : 45° and 45°, _____, and _____.
2. When sum of the two angles is equal to 180°, they are called as _____ angle.
   Example : 90° and 90°, _____, and _____.

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

Shade the complementary angles.

| | | | | | |
|---|---|---|---|---|---|
| 85°, 95° | 45°, 45° | 6°, 84° | 73°, 107° | 36°, 64° | 90°, 90° |

***Answer:***

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

85°+ 95° = _____ and this is _____ (a / not a) complementary angles.
45°+ 45° = _____ and this is _____ angles.
6° + 84° = _____ and this is _____ angles.
73° + 107° = _____ and this is _____ angles.
36° + 64° = _____ and this is _____ angles.
90° + 90° = _____ and this is _____ angles.

***Question: 21*** .....

Find the complement and supplement of 15° and 90°

***Answer:***

One angle is _____ (complements / supplements) to other angle, when sum of the two angles is equal to 90°.
One angle is _____ (complements / supplements) to other angle, when sum of the two angles is equal to 180°.

Complement of 15° = _____, Complement of 90° = _____.
Supplement of 15° = _____, Supplement of 90° = _____

Hi, here in this video you will learn **Symmerty**

***Question: 22*** .....

Line of symmetry is divides any shape into _____ (one / two) _____ (identical / non identical) halves.

***Answer:***

Lines of symmetry is a line that divides any shape into _____ ( equal / unequal) halves.
Symmetrical image have _____ (identical / non identical) parts.
Therefore, line of symmetry is dividing the shape into _____ halves.

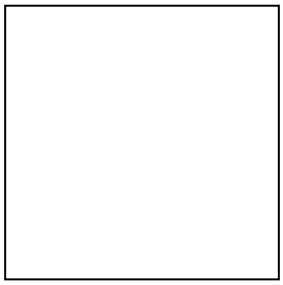
***Question: 23*** .....

How many lines of symmetry does square have?

***Answer:***

Square have _____ sides.
All sides of square are _____ and all angles are _____.

Mark the lines of symmetry.



Therefore, square has _____ lines of symmetry.

***Question: 24*** .....

Classify the following based on the symmetry.

Letter S, scalene triangle, Letter K, Rhombus, Number 8, and circle .

***Answer:***

Lines of symmetry is a line that divides the shape into _____ ( equal / unequal) halves.
The letter S is _____ (symmetrical / asymmetrical) and have _____ lines of symmetry.
Scalene triangle is _____(symmetrical / asymmetrical) and have _____lines of symmetry.
The letter K is _____ (symmetrical / asymmetrical) and have _____ lines of symmetry.
Rhombus is _____(symmetrical / asymmetrical) and have _____ lines of symmetry.
Cat is _____ (symmetrical / asymmetrical) and have _____ lines of symmetry.
Stars is _____ (symmetrical / asymmetrical) and have _____ lines of symmetry.

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

***Question: 25*** .....

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

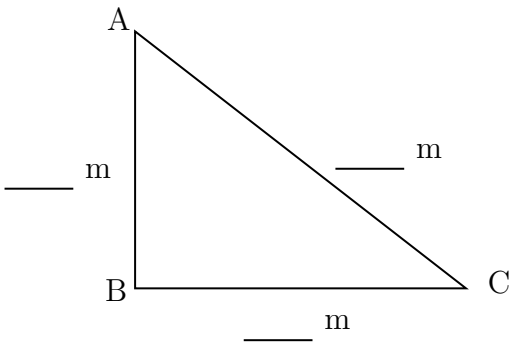
***Answer:***

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: 26*** .....

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, $(\_\_\_\_\_)^2 = (\_\_\_\_\_)^2 + (\_\_\_\_\_)^2$

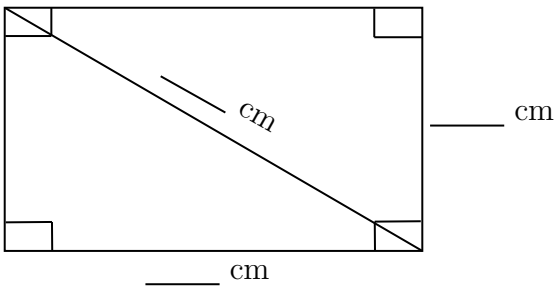
$\_\_\_\_\_ = \_\_\_\_\_ + \_\_\_\_\_$

Therefore, hypotenuse of the triangle is _____.

***Question: 27*** .....

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

***Answer:***



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 _____

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

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***Question: 28*** .....

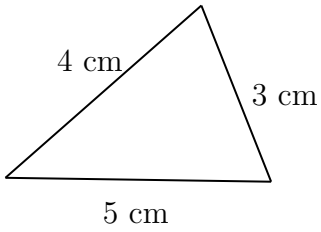
Polygon with three sides is called as _____.

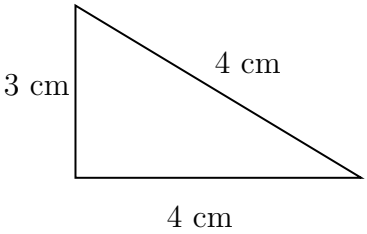
***Answer:***

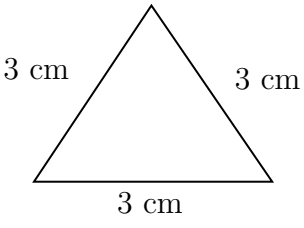
A polygon is a simple _____ (open / closed ) curve made up of only line segments.
Polygon with three sides is called _____.
Draw a diagram of polygon with three sides :

***Question: 29*** .....

Identify the types of triangles.




***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: 30*** .....

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 _____.

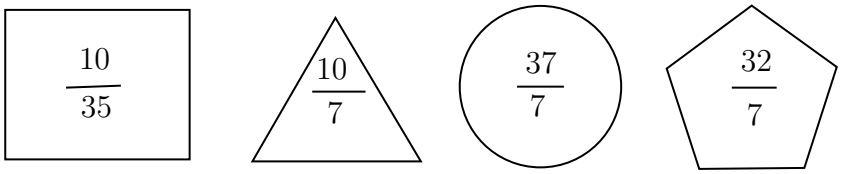
# Number system

| Topics to be Improved | |
|---|---|
| **Fractions** | Division of fraction, Multiplication of fractions |
| **Positive and negative rational numbers** | Identification of positive rational numbers |

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

***Question: 31*** .....

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




***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, $\frac{(\text{ Whole} \times \text{\_\_\_\_\_}) + Numerator}{Denominator}$

$$5\frac{2}{7} = \frac{(\text{\_\_\_} \times \text{\_\_\_}) + \text{\_\_\_\_\_}}{7} = \frac{\square}{\square}$$

***Question: 32*** .....

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 = _____.

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

***Question: 33*** .....

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

***Answer:***

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

$$\frac{12}{40} \div \_\_\_\_ = \frac{12}{40} \times \frac{\square}{\square} = \frac{\square}{\square}$$

Then the answer is _____

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

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***Question: 34*** .....

Fill the boxes

$$2 + 4 + \frac{6}{2} = \frac{2}{\square} + \frac{4}{\square} + \frac{3}{\square} = \frac{\square}{\square} = 9$$

***Answer:***

The whole number can be expressed in fraction with denominator equal to _____ (zero/one).
Therefore, 2 can be written as _____ in fraction.
4 can be written as _____ in fraction.

$$2 + 4 + \frac{6}{2} = \frac{2}{1} + \frac{4}{\square} + \_\_ = \frac{2}{1} + \frac{4}{\square} + \frac{3}{\square} = \frac{\square}{\square} = 9$$

***Question: 35*** .....

There are 400 students in a school. Find the number of girls, if three sixteenth of the students are girls.

***Answer:***

Total number of students = _____
Fraction of students who are girls = _____
Number of girls = $\frac{\square}{\square}$ × _____ = _____

***Question: 36*** .....

Solve : $2\frac{7}{4} \times \frac{2}{3}$

***Answer:***

$2\frac{7}{4}$ is a _____ (proper / mixed) fraction.
Here, 2 is _____, 7 is _____ and 4 is _____.

To convert mixed fraction into improper fraction, $\frac{(\text{ Whole} \times \text{\_\_\_\_\_}) + Numerator}{Denominator}$
Improper fraction of $2\frac{7}{4}$ = _____

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

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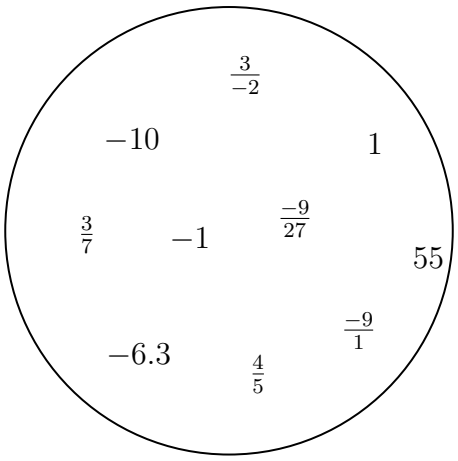
Hi, here in this video you will learn **Positive and Negative rational numbers**

***Question: 37*** .....

Segregate positive and negative rational number.




***Answer:***

- If both the numerator and the denominator of a rational number are _____ (positive/negative), then it is positive rational number.
- If either the numerator and the denominator of a rational number are negative, then it is _____ (positive/negative) rational number.

In the given circle, positive rational numbers are _____ and negative rational numbers are _____.

***Question: 38*** .....

$\frac{-3}{-4}$ is a _____ (positive /negative / neither positive nor negative) rational number.

***Answer:***

$-3$ is a _____ number, $-4$ is a _____ number.

Division of $\frac{-3}{-4} = \frac{\square}{\square}$ and this _____ rational number.

(Positive / Negative / Neither positive nor negative rational number)

***Question: 39*** .....

The product of a positive rational number and a negative rational number is _____ rational number. (Positive/ Negative/ neither positive nor negative)

***Answer:***

Examples for positive rational numbers: _____
Examples for negative rational numbers: _____
Positive rational number × Negative rational number = _____ × _____ = _____ and this is _____ rational number

# Comparing Quantities

| Topics to be Improved | |
|---|---|
| **Percentage** | Basic of percentage |
| **Equivalent ratios** | Basic of proportion |

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

***Question: 40*** .....

2% can be written as

***Answer:***

Percentages are numerators of fractions with denominator_____

$$2\% = \frac{\square}{\square}$$

***Question: 41*** .....

Arun attended the LaPIS test for 100 marks and got 75% marks. What is the mark scored by Arun?

***Answer:***

Arun attended LaPIS test for _____ marks. He got _____ marks.

75 % can be written in fraction form $\frac{\square}{\square}$

Then the mark scored by Arun = Total mark $\times$ 75% = _____ $\times$ $\frac{\square}{\square}$ = _____

***Question: 42*** .....

There are 25 apples in a basket in which 10 of them are rotten. Find the percentage of rotten apples.

***Answer:***

There are _____ apples in a basket.
Number of rotten apples are _____ .

Fraction form of rotten apples in a basket = $\frac{\square}{\square}$

Convert it into a percent= _____ x _____% = _____

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

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***Question: 43*** .....

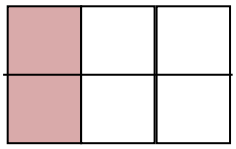
If a:b and c:d are equivalent ratio, then it can be expressed as _____

***Answer:***

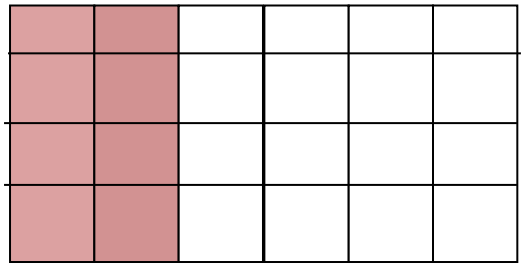
A _____ (proportion / ratio) is used to express _____ ( one/two) equivalent ratios.
Standard form to express proportion is _____.

***Question: 44*** .....

Find the ratio of shaded part to unshaded part of A and B. Are the two ratios equivalent ?



A



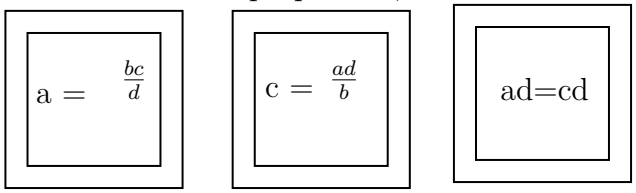
B

***Answer:***

Shaded part of A = _____, Unshaded part of A = _____.
Ratio of shaded to unshaded parts of A is _____. Fractional form = _____.
Shaded part of B = _____ ,
Unshaded part of B = _____.
Ratio of shaded to unshaded parts of B is _____.
Fractional form = _____.
Fraction form of A _____ ( equal/ not equal) to Fraction form of B.

***Question: 45*** .....

If a : b :: c : d is proportion, shade the correct expression



***Answer:***

Two equivalent ratio which are proportion, it can be written as a : b :: c : d
or _____ = _____ (in fraction) .
First and fourth term are called _____ and second and third term are called _____.
In proportion, product of extreme terms is _____ ( equal to/ not equal to) product of middle terms.
Therefore, a × d = _____,
then a = _____ and c = _____

# Algebra

| Topics to be Improved | |
|---|---|
| **subtraction of algebraic expressions** | subtraction of algebraic expressions |

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:

| | | | |
|---|---|---|---|
| | $13x + \_\_\_$ | | $3a - 5b$ |
| (+) | $12x + 10y$ | (-) | $5a - 7b$ |
| | $\_\_\_ + 25y$ | | $-2a - \_\_\_$ |

***Answer:***

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

| | | | |
|---|---|---|---|
| | $13x + \_\_\_$ | | $3a - 5b$ |
| (+) | $12x + 10y$ | (-) | $5a - 7b$ |
| | $\_\_\_ + 25y$ | | $-2a - \_\_\_$ |