# LaPIS Diagnostic Test Workbook - Mathematics

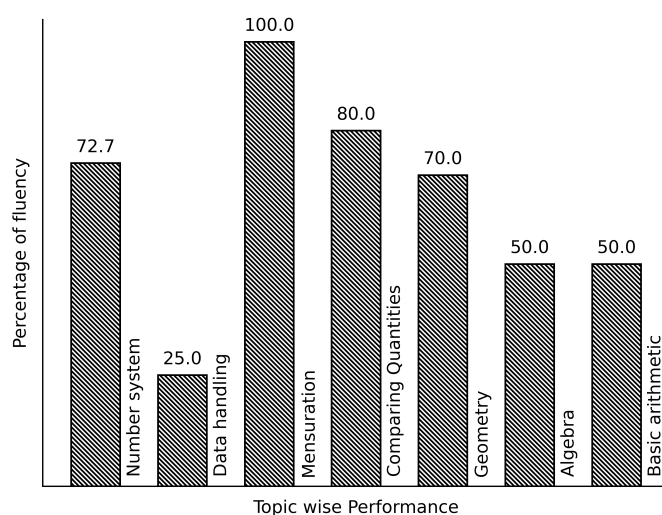| | | |
|---|---|---|
| Name | : | **Abhinav S** |
| Class | : | **7** |
| Section | : | **B** |
| School | : | **AKV Public School** |
| Login ID | : | **AKV131** |

## Abhinav S's Performance Report



Topic wise Performance

**Score: 26/40**　　　　　**Percentage: 65.0%**

# Abhinav S's Study Planner

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

_____
Class Teacher Signature

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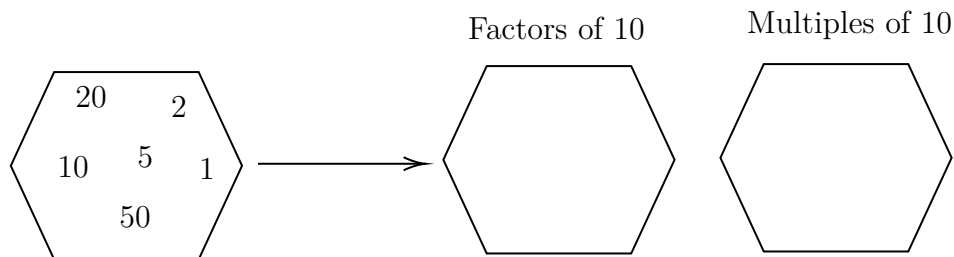Principal Signature

# Basic arithmetic

| Topics to be Improved | |
|---|---|
| **LCM** | Finding LCM |

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

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

Fill the hexagon with factors and multiples of 10.



Factors of 10    Multiples of 10

20    2

10    5    1

50

***Answer:***

A _____ (factor/multiple) of a number is an exact divisor of that number.

The factors of 10 are

| 10 x 1 = ___ | ___ x ___ = 10 |
|---|---|
| 2 x ___ = 10 | ___ x ___ = 10 |

Let's find the multiple of 10

| 10 x 1 = ___ | 10 x 4 = ___ |
|---|---|
| 10 x 2 = ___ | 10 x 5 = ___ |
| 10 x 3 = ___ | 10 x 6 = ___ |

Therefore, factors of 10 are _____ and multiples of 10 are _____.

***Question: 2*** ...........................................................................................

Find the LCM of 50, 100.

***Answer:***

Complete the division using least common multiple.

```
          | 50   , 100
          |_____
          |
          |_____
          |
          |_____
          |
          |_____
          |
          |_____
```

The LCM of 50, 100 is 2 x 2 x \_\_\_ x \_\_\_.

## *Question: 3* ...........................................................................

Every number is the multiple of _____

### *Answer:*

Let's find the first ten multiple of random numbers,

Multiple of 1 = _____

Multiple of 2 = _____

Multiple of 13 = _____

Multiple of 20 = _____

Here, _____ is the common factor of every number.

# Data handling

| Topics to be Improved | |
|---|---|
| **Range** | Finding the range |
| **Chance of probability** | Basis of probability |
| **Arithmetic mean, mode and median** | Mean, Median and Mode |

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

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

Range of the data = _____ − _____

### *Answer:*

The difference between highest value and lowest value is _____.
Example: Find the range of 10, 5, 30, 23, 54, 39 and 16
Highest value = _____ , Lowest value = _____ .
Range = _____ − _____ = _____.

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

Circle the correct range for the following data 31, -20, 35, -38, 29, 0, 43, -25, 51, 14, 9

$$-20 + 51 \qquad \frac{-38-51}{2} \qquad 51 + 38 \qquad \frac{51+20}{2}$$

### *Answer:*

Range = _____ - _____.
Arranging the data in ascending order, _____
In the given data,
Highest value = \_\_\_ , Lowest value = \_\_\_ , Range = _____ − _____ = _____

*Question: 6* ...............................................................................................

Find the range of first 10 multiple of 5.

### *Answer:*

First 10 multiple of 5 = _____
Therefore,
Highest value = _____ , Lowest value = _____ , Range = _____ − _____ = _____

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

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*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)

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

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*Question: 10* .........................................................................................
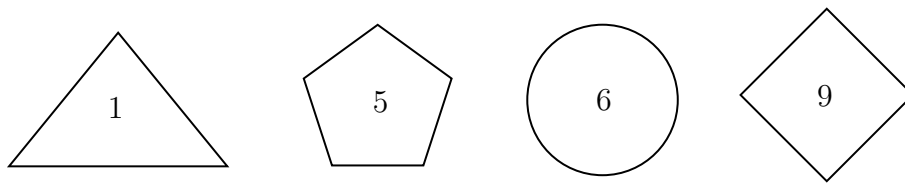
Find the mode of the following data: 5, 15, 23, 5, 32, 44, 72, 55, 6, 3, 5, 65, 45, 67, 24, 19 and 98.

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

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

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

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

*Answer:*

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

Here s sum of all observation = _____ , number of observation = _____

Therefore, mean = _____

Arrange the data in ascending order : _____

Here, median = _____ , mode = _____ .

# Geometry

| Topics to be Improved | |
|---|---|
| **Sum of lengths of two sides of a triangle** | Sum of two sides of a triangle |
| **Right angle triangle and pythagoras property** | Basics of Pythagoras property |
| **Related angles** | Complementary angles |

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

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

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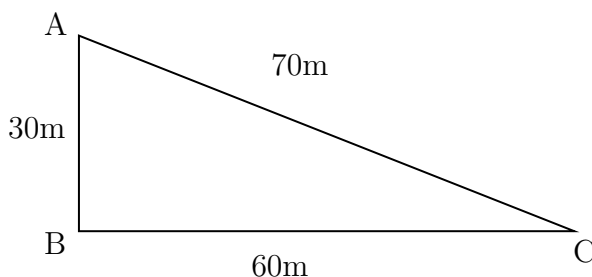


### Answer:

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: 14* . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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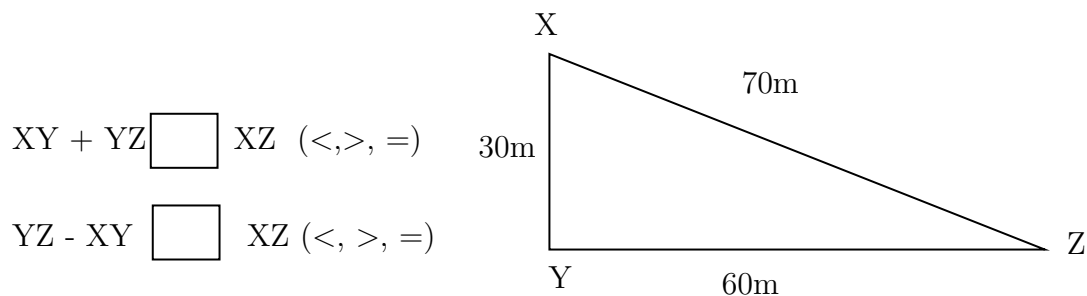
### Answer:

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,

X

70m

30m

XY + YZ ☐ XZ  (<,>, =)

YZ - XY ☐ XZ (<, >, =)

Y     60m     Z

## Question: 15

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 _____.

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

## Question: 16

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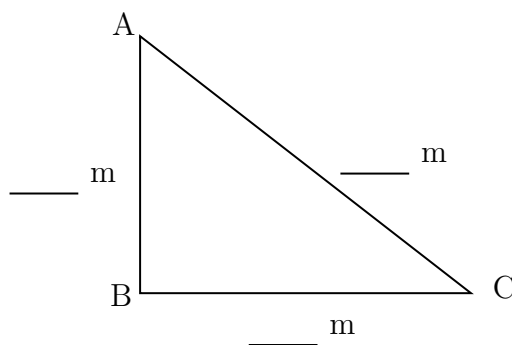
### Answer:

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: 17

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

### Answer:

A

_____ m

_____ m

B _____ m C

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

_____.

*Given:* Base = _____, Altitude = _____,

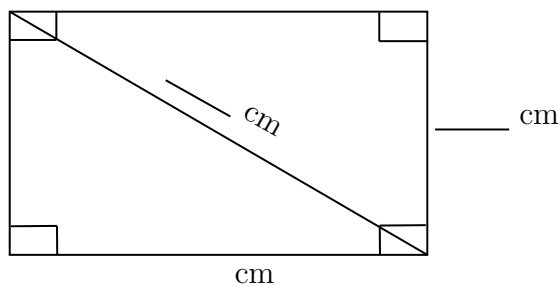Base and altitude are _____ (hypotenuse/ legs) of the triangle.

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

_____ = _____ + _____

Therefore, hypotenuse of the triangle is _____.

## *Question: 18*  . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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

### *Answer:*

_____ cm

_____ 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 **Related Angles**

## *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° = _____
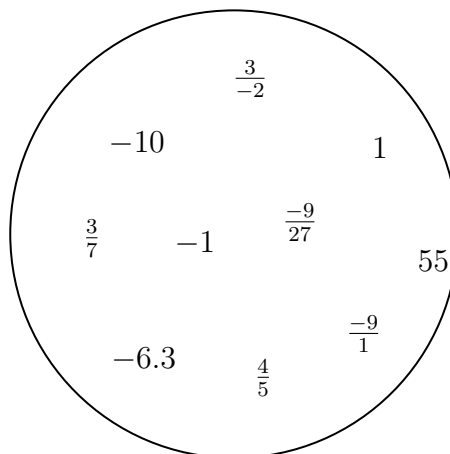
# Number system

| Topics to be Improved | |
|---|---|
| **Positive and negative rational numbers** | Identification of positive rational numbers |
| **Operations on rational numbers** | Subtraction of rational numbers |
| **Exponents** | Solving exponents |

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

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

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

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

***Answer:***

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

Division of $\dfrac{\text{-}3}{\text{-}4} = \dfrac{\boxed{\phantom{x}}}{\boxed{\phantom{x}}}$ and this _____ rational number.

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

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

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 $\times$ Negative rational number = _____ $\times$ _____ = _____ and this is _____ rational number

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

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

Solve: $\frac{-3}{3} + \frac{1}{3}$

***Answer:***

Fractions with same denominators are called _____ (like/ unlike) fractions.

Fraction can be added only if they are _____ (like/ unlike) fractions.

$$\frac{-3}{3} + \frac{1}{3} = \frac{\phantom{xxx}}{3} =$$

***Question: 26***  ...................................................................................

Find the addition of shaded part of box A and shaded part of box B.
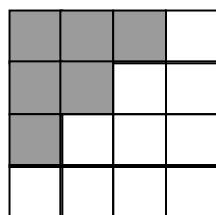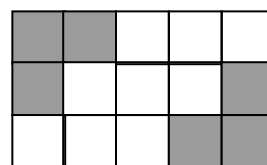


A          B

***Answer:***

Total number of square in box A = _____.

Number of shaded square in box A = _____

Shaded part of box A in fraction = _____

Total number of square in box B = _____.

Number of shaded square in box B = ⎯⎯⎯⎯.
Shaded part of box B in fraction = ⎯⎯⎯⎯.

Shaded part of box A + Shaded part of box B = ⎯⎯⎯⎯ + ⎯⎯⎯⎯ = ⎯⎯⎯⎯

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

Find the missing values in the given figure.



**1L**      =      **(700 ml)** $\frac{7}{10}$    **+**    **(__ ml)** $\frac{\square}{\square}$
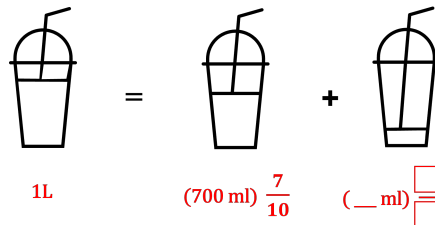
### *Answer:*

One litre = ⎯⎯⎯⎯⎯⎯ ml
$\frac{7}{10}$ of one liter = $\frac{7}{10}$ x ⎯⎯ ml = ⎯⎯ ml

*Given:* $1 = \frac{7}{10} + $ ⎯⎯
Transposing $\frac{7}{10}$ to other sides, $1$ ⎯⎯ $\frac{7}{10}$ = ⎯⎯⎯⎯
Therefore, result is ⎯⎯⎯⎯.

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

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

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 can be written as = $10 \times$ ⎯⎯⎯⎯ $\times$ ⎯⎯⎯
10 is raised to the power of ⎯⎯ = $(10)^{\overline{\phantom{x}}}$

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

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.

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

## *Question: 30* ...............................................................................

(i) Tenth power of 100 is ___ ($(10)^{100}$ or $(100)^{10}$).

(ii) $k$ is raised to the power of 5 is ___ ($(k)^5$ or $(5)^k$).

## *Answer:*

Exponential form = $(Base)^{\overline{\phantom{xx}}}$

(i) Tenth power of 100 : Base = ___, Power/Exponents = ___, exponential form = ___.

(ii) $k$ is raised to the power of 5 : Base = ___, Power/Exponent = ___, exponential form = ___.

# Comparing Quantities

| Topics to be Improved | |
|---|---|
| **Simple interest** | Calculation of simple interest |

Hi, here in this video you will learn **Simple Interest**

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

Match the following.

| Column A | |
|---|---|
| i | Principle(P) |
| ii | Amount (A) |
| iii | Rate (R) |
| iv | Time period (T) |

| Column B | |
|---|---|
| a | Interest calculated based on this |
| b | Total sum you borrow |
| c | Number of years |
| d | Total sum with interest |

### *Answer:*

Formula for calculating simple interest = _____.
Interest calculated based on _____.
Total sum you borrow is known as _____.
Number of years is _____. Total sum with interest is _____.

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

Sara deposited Rs.1200 in a bank. After three years, she received Rs.1320. Find the interest she earned.

### *Answer:*

Given:
Amount = _____ , Principle = _____ , Time period = _____.
If Amount and principle is given, then formula for calculating interest is _____.
Interest = _____ - _____ = _____

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

The simple interest on Rs.5000 for 3 years is Rs.1350. Find the rate of interest.

### *Answer:*

Interest = _____ , Time period = _____ , Principal = _____.

$$\text{Rate of interest} \quad = \frac{\underline{\qquad} \text{ x } 100}{\text{Principal x } \underline{\qquad}}$$

---

Substituting values in the formula,

$$\text{Rate of interest} = \frac{\underline{\hspace{1cm}} \text{ x } 100}{\text{Principal x } \underline{\hspace{1cm}}}$$

Rate of interest = \underline{\hspace{3cm}}

Therefore, the rate of interest is \underline{\hspace{3cm}} %

# Algebra

| Topics to be Improved | |
|---|---|
| **subtraction of algebraic expressions** | subtraction of algebraic expressions |
| **Basics of simple equation** | Formating of simple equation |
| **Monomials, binomials, trinomials and polynomials** | Types of algebraic expression |

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

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

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

| | 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: 36* ...........................................................................................

Solve the following:

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

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

## *Answer:*

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

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

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

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

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



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

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

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

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

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

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

*Answer:*

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

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

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

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

There are $\underline{\hspace{2cm}}$ terms in the expression $7x + 3y + m + 5$.

*Answer:*

In algebraic expression, $\underline{\hspace{3cm}}$ (variables/ terms) are connected together with operations of addition.
The terms in the expression are $\underline{\hspace{1.5cm}}$ , $\underline{\hspace{1.5cm}}$ , $\underline{\hspace{1.5cm}}$ , and $\underline{\hspace{1.5cm}}$ .
Therefore, there are $\underline{\hspace{2cm}}$ terms in the expression.

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

Classify the following expression into monomial, binomial and polynomial.

1. $7m + n + 2$

2. $8x^2 + 0$

3. $7xy + 4m$

*Answer:*

1. The terms in expression $8x^2 + 0$ are $\underline{\hspace{2cm}}$.
   Here, expression has $\underline{\hspace{2cm}}$ term and it is a $\underline{\hspace{3cm}}$

---

2. The terms in expression $7xy + 4m$ are _____.
   Here, expression has _____ term and it is a _____.

3. The terms in expression $7m + n + 2$ are _____.
   Here, expression has ____ term and it is a _____.

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

$5m^2 + m + 0$ is a _____ expression. (Monomial/ Binomial/ Trinomial)

### *Answer:*

The terms in expression $5m^2 + m + 0$ are _____.
Here, the expression has _____ terms and it is called a _____ expression.