7th STD - TERM I

1 NUMBER SYSTEM

Maths

1. Put the suitable symbol <, >, or =
   i) – 65 **<** 65
   ii) 0 **<** 1000
   iii) – 2018 **=** – 2018
   iv) 36 **>** – 22

2. Solve.
   i) (– 4) + (+ 3) = – 1
   ii) (– 4) + (– 3) = – 7
   iii) (+ 4) + (– 3) = 1

3. The integer without sign represents positive integer.

4. When we add two integers of the same sign the sum will also be an integer of the same sign.

5. When we add two integers of different sign, the sum will be the difference between the two integers and have the sign of the integer with greater value.

6. i) (– 40) + 30 = – 10
   ii) 60 + (– 50) = 10

7. (– 70) + (– 12) = – 82

8. A submarine is at 32 feet below the sea level. If it ascends to 8 feet what is its new position?
   (– 32) + (8) = (– 24)

9. A man is on the ground floor. If he goes 6 floors up and then moves down to 6 floors from there then in which floor will he be?
   + 6 – 6 = 0 (ground floor)

10. For any two integers a, b ; a + b is also an integer, a + b = b + a, commutative property on addition.

11. Associative property under addition. For any three integers a, b, c
    a + (b + c) = (a + b) + c

12. Zero is called the identity with respect to addition or additive identity of the collection of integers. For any integers a, a + 0 = a = 0 + a

13. The additive inverse of +15 is –15
    The additive inverse of –21 is +21

14. For any integer a, –a is the additive inverse
    a + (–a) = 0 = (–a) + a

15. Fill in the blanks
    i) 20 + (– 11) = **– 11** + 20
    ii) (– 5) + (– 8) = (– 8) + **(– 5)**
    iii) (– 3) + 12 = **12** + (– 3)

16. Mention the property
    i) (– 45) + (– 12) = – 57
    Closure Property
    ii) (– 7) + (– 5) = (– 5) + (– 7)
    Commutative Property
    iii) (–7) + [(–4) + (–3)] = [(–7) + (–4)] + (–3)
    Associative Property
    iv) 0 + (– 7254) = – 7254
    Additive Identity

17. i) (– 10) + (+ 7) = – 3
    ii) (– 8) + 10 + (– 2) = 0
    iii) 20 + (– 9) + 9 = 20

18. The temperature at Srinagar was –3°C on Friday. If the temperature decreases by 1°C next day, then what is the temperature on that day?
– 3°C – 1°C = – 4°C

19. What number should be added to (–17) to get (–19)?
(– 17) + **(– 2)** = (– 19)

20. i) (– 5) – (– 18) = – 5 + (18) = 13
ii) (– 100) – 0 + 100 = 0

21. i) (– 30) × 40 × (– 1) = 120
ii) (– 5) × 12 = – 60
iii) 999 × 0 = 0

22. For any two integers a, b ;
a × b = b × a – Commutative property

23. For any three integers a, b, c ; (a × b) × c = a × (b × c) – Associative property

24. For any integer a ; a × 1 = 1 × a = a
– Multiplicative Identity

25. For any three integers a, b, c ;
a × (b + c) = (a × b) + (a × c) – Distributive property of multiplication over addition

26. Solve:
i) – 80 × **1** = – 80
ii) (– 10) × **(– 2)** = 20
iii) (100) × (– 5) = – 500
iv) **0** × 75 = 0
v) 11 × (– 1) = – 11
vi) (– 12) × (– 9) = 108

27. An integer divided by zero is not defined. But zero divided by a non-zero integer is zero.

28. Solve:
i) (– 16) ÷ 4 = – 4
ii) (– 200) ÷ 10 = – 20

29. One night in Kashmir, the temperature is – 5°C. Next day the temperature is 9°C. What is the increase in temperature?
9 – (– 5) = 9 + 5 = 14°C

30. Solve:
i) – 1 + **11** = 10
ii) – 70 + 20 = **– 40** – 10

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2 MEASUREMENTS

Maths

1. Perimeter of a rectangle = 2 (l + b) units
2. Area of a rectangle = l × b sq.units
3. Perimeter of a square = 4 × a units
4. Area of a square = a × a sq.units
5. Area of a right angled triangle = $\frac{1}{2}$ × b × h sq.units
6. Area of a parallelogram = b × h sq.units
7. One of the sides and the corresponding height of the parallelogram are 12 m and 8 m respectively. Find the area of the parallelogram

   b × h = 12 × 8 = 96 sq.m
8. Find the height 'h' of the parallelogram whose area and base are 368 sq.cm and 23 cm respectively.

   b × h = 368

   23 × h = 368

   $\Rightarrow h = \frac{368}{23}$ = 16 cm
9. The base of the parallelogram is thrice its height. If the area is 192 sq.cm. Find the base and height.

   b × h = 192

   3h × h = 192

   $3h^2 = 192$

   $h^2 = 64$

   h = 8 cm
10. Parallelogram is a four sided closed shape in which opposite sides are both parallel and equal.
11. In a parallelogram if all the sides are equal then it is called Rhombus.
12. A parallelogram with one pair of non-parallel sides is known as a Trapezium.
13. If the non-parallel sides of a Trapezium are equal then it is known as an isosceles Trapezium.
14. The perimeter of a parallelogram whose adjacent sides are 6 cm and 5 cm is

    6 + 6 + 5 + 5 = 22 cm
15. The area of a parallelogram whose base 10 m and height 7 m is

    b × h = 10 × 7 = 70 m^2
16. The base of the parallelogram with area is 52 sq.cm and height 4 cm is

    $b = \frac{A}{h} = \frac{52}{4}$ = 13 cm
17. If the base is increased 2 times and the height is halved then the area of the parallelogram remains the same.
18. In a parallelogram the base is three times its height. If the height is 8 cm then the area of the parallelogram

    h = 8 cm

    b = 3 × 8 = 24 cm

    b × h = 24 × 8 = 192 sq.cm
19. Area of the rhombus = $\frac{1}{2} \times d_1 \times d_2$ sq.units (diagonal based)
20. Area of the rhombus = b × h sq.u (side based)

21. Find the area of the rhombus whose side is 17 cm and the height is 8 cm

$b \times h = 17 \times 8 = 136$ sq.cm

22. Calculate the area of the rhombus having diagonals equal to 6m and 8m

$$= \frac{1}{2} \times (d_1 \times d_2)$$

$$= \frac{1}{2} \times (6 \times 8)$$

$$= \frac{1}{2} \times 48 = 24 \text{ sq.cm}$$

23. If the area of the rhombus is 60 sq.cm and one of the diagonals is 8cm. Find the length of the other diagonal.

$$\frac{1}{2} \times (d_1 \times d_2) = 60$$

$$\frac{1}{2} \times (8 \times d_2) = 60$$

$$8 \times d_2 = 60 \times 2 = 120$$

$$d_2 = \frac{120}{8}$$

$$= 15 \text{ cm} \quad \left(d_2 = \frac{2A}{d_1}\right)$$

24. In the terminology of railways, "Diamond crossing" refers to the point where two railways lines cross, forming the shape of rhombus at the crossing point.

25. The height of the rhombus whose area 96 sq.m and side 24m is

$$h = \frac{A}{b} = \frac{96}{24} = 4\text{m}$$

26. The angle between the diagonal of a rhombus is 90^o.

27. Area of the trapezium

$$= \frac{1}{2} \times h\,(a+b) \text{ sq.units.}$$

28. Find the area of the trapezium whose height is 14cm and parallel sides are 18cm and 9cm of length.

$$\frac{1}{2}h\,(a + b) = \frac{1}{2} \times 14 \times (18 + 9)$$

$$= 7 \times 27 = 189 \text{ sq.cm.}$$

29. The area of a trapezium is 828 sq.cm. If the lengths of its parallel sides are 19.6cm and the 16.4cm find the distance between them

$$\frac{1}{2} \times h\,(a + b) = 828$$

$$\frac{1}{2} \times h\,(19.6 + 16.4) = 828$$

$$\frac{1}{2} \times h\,(36) = 828 \quad \left(h = \frac{2 \times A}{(a + b)}\right)$$

$$18h = 828$$

$$h = 46 \text{ cm}$$

30. If the base and height of a parallelogram are in the ratio 7 : 3 and the height is 45 cm then find the area of the parallelogram.

height, $3x = 45$

$$x = \frac{45}{3} = 15 \text{ cm}$$

base, $7x = 7 \times 15$

$= 105$ cm

Area of a parallelogram $= b \times h$

$= 105 \times 45$

$= 4725$ sq.cm

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3 ALGEBRA

Maths

1. An expression with one term is called a monomial.
   Eg: 2x.
2. An expression with two terms is called a binomial.
   Eg: 2x + 3y.
3. An expression with three terms is called a trinomial.
   Eg: 2x + 3y + 4z
4. An expression with three or more terms is called a polynomial.
5. A symbol which takes various numerical values is called a Variable.
   Eg: (a, b, c, d,.....x, y, z)
6. A symbol having a fixed numerical value is called a constant.
   Eg: 3,7,15,19,-15.
7. Consider the term – 6ab.
   The co-efficient of "a" is – 6b
   The co-efficient of "b" is – 6a
   The co-efficient of "ab" is – 6
   The numerial co-efficient in the term – 6ab is – 6
8. Consider the expression 7x + 5x – 12x + 6, 7x, 5x and 12x are like terms.
9. Consider the expression 7y + 12x – 16; 12x, – 16, 7y are unlike terms.
10. The variable in the expression 16x – 7 is x.
11. The constant term of the expression 2y – 6 is – 6.
12. In the expression 25m + 14n,the type of the terms are unlike terms.
13. The number of terms in the expression 3ab + 4c – 9 is three.
14. The numerical Co-efficient of the terms – xy is –1.
15. An algebraic expressions which is equivalent to the verbal statement, Three times the sum of x and y is 3(x+y).
16. The numerical co-efficient of – 7mn is –7.
17. The value of 7a – 4b
    when a = 3, b = 2 is 13.
18. The additive inverse of 7pq is – 7pq.
19. The additive inverse of – a is a.
20. 21x + 9 – (5x + 7) = (21 – 5)x + (9 – 7)
    = 16x + 2
21. Add : (i) 8x + 3x = 11x
    i) 7mn + 5mn = 12mn
    ii) – 9y + 11y + 2y = 4y
22. Subtract:
    i) 17xyz – 7xyz = 10xyz
    ii) 25q – 15q = 10q
23. 3mn + (– 5mn) + 8mn + (– 4mn) = 2mn
24. a – (– a) = 2a

25. In an expression, we can add or subtract only like terms

26. An expression equated to another expression is called equation.

27. If a = 5, the value 2a + 5 is 15.

28. The sum of twice and four times of the variable x is 6x.

29. $x + 5 = 8$

$x = 8 - 5 = 3$

30. $p - 3 = 7$

$p = 7 + 3 = 10$

31. $2x = 30$

$x = \frac{30}{2} = 15$

32. $\frac{m}{6} = 5$

$m = 6 \times 5 = 30$

33. $7x + 10 = 80$

$7x = 80 - 10 = 70$

$x = \frac{70}{7} = 10$

34. The generalization of the number pattern 3, 6, 9, 12....is 3n.

35. The solution of $3x + 5 = x + 9$ is

$3x + 5 = x + 9$

$3x - x = 9 - 5$

$2x = 4$

$x = 2$

36. The equation $y + 1 = 0$ is true only when y is –1.

37. Variables and constant are combined by the operation addition and subtraction to construct an algebraic expression.

38. The number in the variable term is called the numerical co-efficient.

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4 DIRECT AND INVERSE PROPORTION

Maths

1. Ratio is the comparison of two quantities of the same kind.
2. In a : b : : c : d product of the means is equal to product of the extremes that is bc = ad.
3. If 6 children shared 24 pencils equally then how many pencils are required for 18 children?

$$\frac{24}{6} = 4$$

$$18 \times 4 = \underline{\textbf{72 pencils}}$$

4. If the cost of 8 apples is 56 then the cost of 12 apples is $\frac{56}{8} \times 12 = \underline{\textbf{84}}$
5. If the weight of one fruit box is 3½ kg then the weight of 6 such boxes is

$$6 \times 3\frac{1}{2} = 6 \times \frac{7}{2}$$

$$= \underline{\textbf{21}}$$

6. A car travels 60km with 3 liters of petrol. If the car has to cover the distance of 200km, it requires **10** liters of petrol.

$$\frac{3}{60} \times 200 = \frac{20}{2}$$

$$= \underline{\textbf{10 litres}}$$

7. If the cost of 7m cloth is ₹ 294, then the cost of 5m of cloth is

$$\frac{294}{7} \times 5 = 42 \times 5$$

$$= \underline{\textbf{₹ 210}}$$

8. If a machine in a cool drinks factory fills 600 bottles in 5 hrs, then it will fill **360** bottles in 3 hours.

$$\frac{600}{5} \times 3 = 120 \times 3$$

$$= \underline{\textbf{360 bottles}}$$

9. A dozen bananas costs 20 what is the price of 48 bananas?

$$\frac{20}{12} \times 48 = \underline{\textbf{80}}$$

10. The shadow of a pole with the height of 8m is 6m. If the shadow of another pole measured at the same time is 30m find the height of the pole?

$$\frac{8}{6} \times 30 = \underline{\textbf{40m}}$$

11. If Mani buys 5kg of potatoes for ₹75 then he can buy **7kg** of potatoes for ₹105.

$$\frac{5}{75} \times 105 = \underline{\textbf{7 kg}}$$

12. 35 cycles were produced in 5 days by a company then 147 cycles will be produced in 21 days.

$$\frac{35}{5} \times 21 = 7 \times 21 = \underline{\textbf{147}}$$

13. An aircraft can accomodate 280 people in 2 trips. It can take 10 trips to take 1400 people

$$\frac{2}{280} \times 1400 = \frac{1}{140} \times 1400 = \underline{\textbf{10}}$$

14. Suppose 3kg of sugar is used to prepare sweets for 50 members, then 9 kg of sugar is required for 150 members

$$\frac{3}{50} \times 150 = \underline{\textbf{9 kg}}$$

15. 16 taps can fill a petrol tank in 18 minutes. The time taken for 9 taps to fill the same tank will be

$$\frac{16}{9} \times 18 = \underline{\textbf{32 minutes}}$$

16. If 40 workers can do a project work in 8 days, then **80 workers** can do it in 4 days.

$$\frac{40 \times 8}{4} = 80 \text{ workers}$$

17. A typists are employed to complete a work in 12 days. If two more typists are added, they will finish the same work in **8 days**.

$$\frac{4 \times 12}{6} = 8 \text{ days}$$

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7th STD - TERM I

5 GEOMETRY

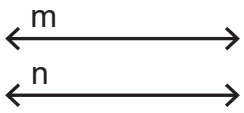
Maths

1. A line extends along both directions without any end. A line AB is denoted by $\overleftrightarrow{AB}$

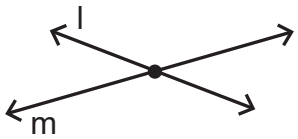
2. A line segment has two end points. The line segment AB is represented by $\overline{AB}$

3. A ray is a line that starts from a point and extends without any end in a -particular direction. It is denoted by $\overrightarrow{AB}$

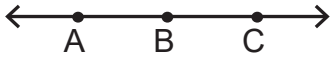
4. Parallel lines never intersect each other. It is denoted by m || n



5. When two lines have a common point they are called intersecting lines

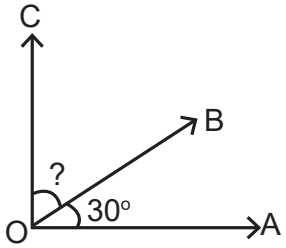


6. If three or more points lies on the same line, then they are called collinear points

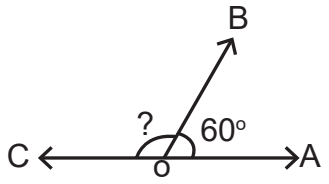


7. Points that do not lie on the same line are called non-collinear points.

8. i) An angle whose measure is less than 90° is called an acute angle.
   ii) An angle whose measure is exactly 90° is called a right angle.
   iii) An angle whose measure is greater than 90° and lesser than 180° is called an obtuse angle.
   iv) An angle whose measure is exactly 180° is called a straight angle.
   v) An angle that measures 0° is called zero angle.
9. Two angles are called complementary angles if their sum is 90°.
10. Two angles are called supplementary angles if their sum is 180°.
11. The angle with measure 128° is called an obtuse angle.
12. The corner of the A4 paper has a right angle.
13. If a perpendicular line is bisecting the given line, you would have two right angles.
14. Since 89° + 91° = 180°, this pair will be a linear pair.
15. Since 117° + 62° = 179° ≠ 180°, this pair cannot make a linear pair.
16. $\angle BOC = 60°$

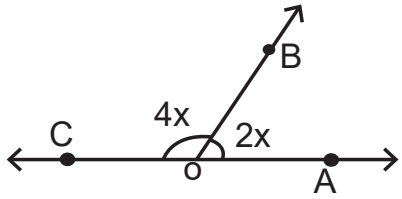


17.



$\angle OBC = 120^\circ$ $(180^\circ - 60^\circ = 120^\circ)$

18.



$\angle BOA = ?$

$\angle COB = ?$

$\therefore \angle BOA = 60^\circ$

$\therefore \angle COB = 120^\circ$

$4x + 2x = 180^\circ$

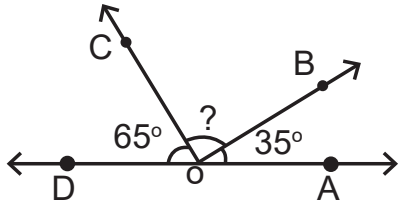
$6x = 180^\circ$

$x = 30^\circ$

19. Vertically opposite angles are equal in measure.

20. The sum of all angles at a points is 360°.

21.

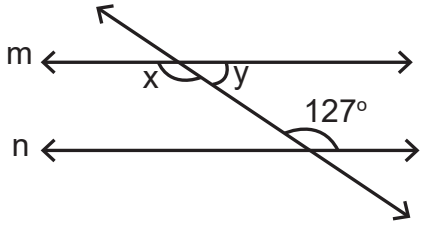


$\angle BOC = 180^\circ - (65^\circ + 35^\circ)$

$= 180^\circ - 100^\circ = 80^\circ$

22. A transversal is a line that intersects two lines at distinct points.

23. Find the value of x and y.

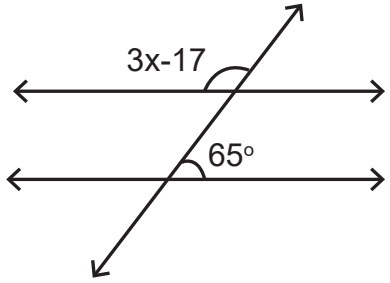


$x = 127^\circ$ [Alternate interior angles are equal]

$y = 180 - 127 = 53^\circ$ [Straight angle]

$y = 53^\circ$

24. Find the value of x.



$3x - 17 + 65 = 180^\circ$

$3x = 180 - 48$

$3x = 132$

$x = \frac{132}{3} = 44^\circ$

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6 INFORMATION PROCESSING

Maths

1. All the formation of four squares (of size 1cm × 1cm) formed by joining edge to edge are called TETROMINOES.
2. The word “Tri” means three.
3. The word “Tetra” means four.

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