

Class: 7
Subject: Mathematics
Topic: ASK1507UT05
No. of Questions: 30

Q1. The ratio 35 : 84 in simplest form is

- (a) 5 : 7
- (b) 7 : 12
- (c) 5 : 12
- (d) None of these

Sol. (c)

Q2. In a class there are 20 boys and 15 girls. The ratio of boys to girls is :

- (a) 4 : 3
- (b) 3 : 4
- (c) 4 : 5
- (d) None of these

Sol. (a)

Q3. Two numbers are in the ratio 7 : 9. If the sum of the numbers is 112, then the larger number is:

- (a) 49
- (b) 72
- (c) 63
- (d) 42

Sol. (c)

Q4. The ratio of 1.5 m to 10 cm is :

- (a) 1 : 15
- (b) 15 : 10
- (c) 10 : 15
- (d) 15 : 1

Sol. (d)

- Q5. In $4 : 7 :: 16 : 28$, 7 and 16 are called
- (a) Extreme terms;
 - (b) Middle terms;
 - (c) B middle and c extreme term;
 - (d) None of these

Sol. (b)

- Q6. The first, second and fourth terms of a proportion are 16, 24 and 54 respectively. Then the third term is :
- (a) 36
 - (b) 28
 - (c) 48
 - (d) 32

Sol. (a)

- Q7. If 12, 21, 72, 126 are in proportion, then:
- (a) $12 \times 21 = 72 \times 126$
 - (b) $12 \times 72 = 21 \times 126$
 - (c) $12 \times 126 = 21 \times 72$
 - (d) None of these

Sol. (c)

- Q8. The length and breadth of a rectangle are in the ratio 3: 1. If the breadth is 7 cm, then the length of the rectangle is
- (a) 14 cm
 - (b) 16 cm
 - (c) 18 cm
 - (d) 21 cm

Sol. (d)

- Q9. The value of m, if 3, 18, m, 42 are in proportion is:
- (a) 6
 - (b) 54
 - (c) 7
 - (d) None of these

Sol. (c)

- Q10. Length and width of a field are in the ratio: 5 : 3. If the width of the field is 42 m then its length is :
- (a) 100 m
 - (b) 80 m
 - (c) 50 m
 - (d) 70 m

Sol. (d)

- Q11. $256 = \underline{\hspace{1cm}}$.
- (a) 2^8
 - (b) 2^7
 - (c) 2^5
 - (d) 2^6

Sol. (a)
Given:
 $256 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$
 $\therefore 256 = 2^8$

- Q12. The prime factorization of $6 \times 6 \times 6 \times 6$ is _
- (a) $3^2 \times 2^4$
 - (b) $3^4 \times 2^4$
 - (c) $3^5 \times 2^5$
 - (d) $2^5 \times 3^3$

Sol. (b)
We have
 $6 \times 6 \times 6 \times 6 = (3 \times 2) \times (3 \times 2) \times (3 \times 2) \times (3 \times 2)$
 $= 3 \times 3 \times 3 \times 3 \times 2 \times 2 \times 2 \times 2$
 $= 3^4 \times 2^4$
Hence, the prime factorization of $6 \times 6 \times 6 \times 6$ in exponential form is $3^4 \times 2^4$

- Q13. $(-3)^2 \times (-5)^2 = _$
(a) 224
(b) 226
(c) 225
(d) None of these

Sol. (c)

- Q14. $\left(\frac{3}{5}\right)^4 \times \left(\frac{3}{5}\right)^6 = _$
(a) $\left(\frac{3}{5}\right)^{-2}$
(b) $\left(\frac{3}{5}\right)^{10}$
(c) $\left(\frac{3}{5}\right)^{24}$
(d) $\left(\frac{3}{5}\right)^2$

Sol. (b)

We have,

$$\begin{aligned}\left(\frac{3}{5}\right)^4 \times \left(\frac{3}{5}\right)^6 &= \left(\frac{3}{5}\right)^{6+4} \quad (\because a^m \times a^n = a^{m+n}) \\ &= \left(\frac{3}{5}\right)^{10} \\ \therefore \left(\frac{3}{5}\right)^4 \times \left(\frac{3}{5}\right)^6 &= \left(\frac{3}{5}\right)^{10}\end{aligned}$$

- Q15. $\left(\frac{4}{3}\right)^5 \div \left(\frac{4}{3}\right)^2 = _.$
(a) $\left(\frac{4}{3}\right)^4$
(b) $\left(\frac{4}{3}\right)^7$
(c) $\left(\frac{4}{3}\right)^5$
(d) $\left(\frac{4}{3}\right)^3$

Sol. (d)

We have,

$$\left(\frac{4}{3}\right)^5 \div \left(\frac{4}{3}\right)^2 = \left(\frac{4}{3}\right)^{5-2} \quad (\because \frac{a^m}{a^n} = a^{m-n})$$

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

- Q16. $\left[\left(\frac{2}{3}\right)^0 \times \left(\frac{3}{4}\right)^0\right] - \left[\left(\frac{4}{5}\right) \div \left(\frac{5}{6}\right)^0\right] = \underline{\hspace{1cm}}$
- (a) 0
(b) 1
(c) 2
(d) 4

Sol. (a)
We have,
$$\left[\left(\frac{2}{3}\right)^0 \times \left(\frac{3}{4}\right)^0\right] - \left[\left(\frac{4}{5}\right) \div \left(\frac{5}{6}\right)^0\right]$$
$$= (1 \times 1) - (1 \div 1) \quad (\because a^0 = 1)$$
$$= 1 - 1$$
$$= 0$$

- Q17. $\left(\frac{-101}{4}\right)^4 \div \left(\frac{-101}{4}\right)^3 = \underline{\hspace{1cm}}$
- (a) $\left(\frac{-101}{4}\right)^{12}$
(b) $\left(\frac{-101}{4}\right)^7$
(c) $\frac{-101}{4}$
(d) $\left(\frac{-101}{4}\right)^2$

Sol. (c)
We have,
$$\left(\frac{-101}{4}\right)^4 \div \left(\frac{-101}{4}\right)^3 = \left(\frac{-101}{4}\right)^{4-3} \quad \left(\because \frac{a^m}{a^n} = a^{m-n}\right)$$
$$= \left(\frac{-101}{4}\right)^1$$
$$\therefore \left(\frac{-101}{4}\right)^4 \div \left(\frac{-101}{4}\right)^3 = \frac{-101}{4}$$

Q18. $\frac{256 \times 3^4 \times a^5}{a^4 \times 3^2} = _$

- (a) 2100 a
- (b) 2304 a
- (c) 2102 a
- (d) 2300a

Sol. (b)

$$\frac{256 \times 3^4 \times a^5}{a^4 \times 3^2} = \frac{4^4 \times 3^4 \times a^5}{a^4 \times 3^2}$$

$$= \frac{12^4 \times a^{5-4}}{3^2} \quad \left[\because (a \times b)^m = a^m \times b^m \text{ and } \frac{a^m}{b^m} = a^{m-n} \right]$$

$$= \frac{12 \times 12 \times 12 \times 12 \times a}{9}$$
$$= 2304a$$

Q19. $(-6m)^3 = _$

- (a) $(-6)^3 \times (m)^3$
- (b) $(6)^3 \times (m)^3$
- (c) $(-6)^3 \times (-m)^3$
- (d) $(-6)^3 \times (m)$

Sol. (a)

$$(-6m)^3 = (-6 \times m)^3$$
$$= (-6)^3 \times (m)^3 \quad \left[\because (a \times b)^m = a^m \times b^m \right]$$
$$\therefore (-6m)^3 = (-6)^3 \times (m)^3$$

Q20. $\left(\frac{3^5}{3^2}\right) \times 4^3 = _$

- (a) 7^5
- (b) 9^3
- (c) 11^3
- (d) 12^3

Sol. (d)

$$\left(\frac{3^5}{3^2}\right) \times 4^3 = 3^{5-2} \times 4^3 \quad \left(\because \frac{a^m}{a^n} = a^{m-n} \right)$$
$$= 3^3 \times 4^3$$
$$= (3 \times 4)^3 \quad \left[\because a^m \times b^m = (a \times b)^m \right]$$
$$= 12^3$$

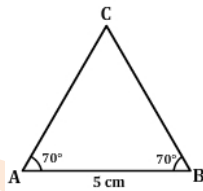
- Q21. A triangle PQR has the measurements $PQ = 6$ cm, $QR = 4.5$ cm and $RP = 5$ cm. Which among the following is the first step of construction?
- (a) With P as the centre and radius 5 cm, draw an arc
 - (b) Draw a line segment PQ of length 6 cm
 - (c) With Q as the centre and radius 4.5 cm, draw another arc to cut the previous arc at R.
 - (d) Join P to R and Join Q to R.

Sol. (b)
The first step in the given construction is to draw a line segment PQ of length 6 cm.

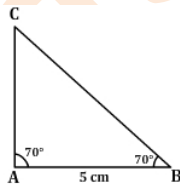
- Q22. The measurements of a triangle ABC are $AB = 4.5$ cm, $BC = 6.1$ cm and $CA = 5.6$ cm. Which of the following is the last step in the construction of triangle ABC?
- (a) Join A and B, A and C
 - (b) Draw a line segment BC of length 6.1 cm
 - (c) With B as the centre and radius 4.5 cm, draw an arc
 - (d) With C as the centre and radius 5.6 cm, draw an arc to cut the previous arc at A.

Sol. (a)

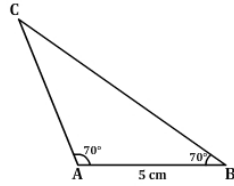
- Q23. Which of the following figures would look like the given rough sketch of the triangle ABC with measures $AB = 5$ cm, $\angle A = 70^\circ$ and $\angle B = 70^\circ$?
- (a)



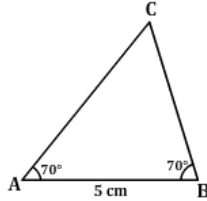
(b)



(c)



(d)



Sol. (a)

The given rough an idea of the shape of the given triangle ABC as it is an acute triangle as well as isosceles triangle.

Q24. The following are the steps for construction of a right angled triangle DEF, right angled at E with hypotenuse 6 cm and one of its legs 4 cm long:

- (i) Draw a line segment EF of length 4 cm
- (ii) From E, draw a ray EX perpendicular to EF.
- (iii) Join F and D
- (iv) With F as the centre and radius 6 cm. Draw an arc to cut EX at D.

The proper order of steps for construction is _

- (a) (i) ,(ii), (iii), (iv)
- (b) (i), (ii), (iv), (iii)
- (c) (iv), (iii), (ii), (i)
- (d) (i), (iv), (iii), (ii)

Sol. (b)

Steps of construction:

1. Draw a line segment EF of length 4 cm.
2. From E, draw a ray EX perpendicular to EF.
3. With F as the centre and radius 6 cm, draw an arc to cut EX at D.
4. Join F and D

$\triangle DEF$ is the required triangle

Hence, the proper order of steps for construction is (i), (ii), (iv), (iii)

Q25. In order to construct a line parallel to a given line through a point not on it, which of the following properties are used?

- (a) Properties regarding transversal and parallel lines
- (b) Properties regarding intersecting lines
- (c) Properties regarding sum of the angles of a triangle
- (d) Properties regarding relationship between sides of a triangle

Sol. (a)

In order to construct a line parallel to given line through a point not on it, properties regarding and parallel lines are used.

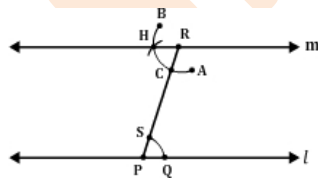
Q26. The steps to be followed to construct a line parallel to a given line through a point through a point not on it area as follows:

- (i) Draw a line 'l' and mark a point P on it and a point R outside.
- (ii) With P as centre and a convenient radius draw an arc to cut l to Q and PR at S.
- (iii) Join P to R.
- (iv) With R as centre and radius PQ draw an arc AB to cut PR at C.
- (v) Using compasses measures the arc length QS and with C as the centre and the same arc length cut the arc AB at H.
- (vi) Now join R to H to draw a line m.

The proper order of steps for construction is __

- (a) (iii), (i), (v), (ii), (iv), (vi)
- (b) (v), (i),(ii), (iii), (vi), (iv)
- (c) (i), (iii), (ii), (iv), (v), (vi)
- (d) (i), (iv), (vi), (iii), (ii), (v)

Sol. (c)



The steps to be followed to construct a line parallel to a give line through a point not on it are as follows;

1. Draw a line 'l' and mark a point P on it and a point R outside.
2. Join P to R.
3. With P as centre and a convenient radius draw an arc to cut line l at Q and PR at S.
4. With R as centre and the radius PQ draw an arc AB to cut PR at C.
5. Using compasses measures the arc length QS and with C as centre the same arc length cut the arc AB at H.

6. Now join R to H to draw a line m.

Hence, the proper order of steps for construction is (i), (iii), (ii), (iv), (v), (vi)

Q27. In order to construct a line parallel to a given line through a point not on it, which of the following properties are used?

- (a) Sum of the three angles of a triangle is 180°
- (b) Alternate interior angles are equal
- (c) Exterior angle of a triangle is equal to the sum of its two interior opposite angles
- (d) Pythagoras property

Sol. (b)

In order to construct a line parallel to a given line through a point not on it, we use the property that if a transversal cuts a pair of parallel lines alternate interior angles are equal.

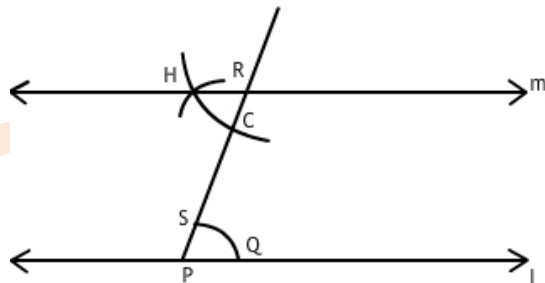
Q28. Which of the following is true about a pair of parallel lines?

- (a) Parallel lines meet at one point
- (b) Parallel lines meet at more than one point
- (c) Parallel lines are also called as intersecting lines
- (d) Parallel lines do not intersect

Sol. (d)

Parallel lines do not intersect even if extended.

Q29. For the figure given below, steps to construct a line parallel to a given line through a point not on it are given, in step 3 the relation between arcs SW and CH is ____



- (a) arc SQ is greater than arc CH
- (b) arc SQ is lesser than arc CH
- (c) arc SQ is equal to arc CH
- (d) There is no specific relation between the arc SQ and arc CH

Sol. (c)

From the figure it is clear that, the relation between the arcs SQ and CH is that they are equal, as alternate interior angles are equal.

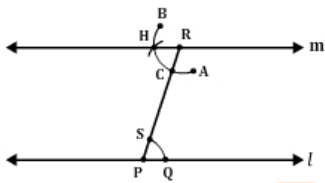
Q30. The steps to be followed to construct a line parallel to a given line through a point not on it are as follows:

- (i) Draw a line 'l' and mark a point P on it and a point R outside
- (ii) Join P to R
- (iii) With P as centre and a convenient radius draw an arc to cut l at Q and PR at S.
- (iv) With R as centre and radius PQ drawn an arc AB to cut PR at C
- (v) Using compasses measures the arc length QS and with C as centre and the same arc length cut the arc AB at.
- (vi) Now join R to H to draw a line m.

In this construction, in step (v) the lengths of the arc QS and arc CH are equal as ___

- (a) Alternate interior angles are equal
- (b) Corresponding angles are equal
- (c) Vertically opposite angles are equal
- (d) Interior angles on the same side of the transversal are supplementary

Sol. (a)



In this construction, in step (v) the length of the arc QS and CH are equal as alternate interior angles are equal.