

Class: 7
Subject: Mathematics
Topic: ASK1507SA1
No. of Questions: 30

Q1. The mean of 10 observations was calculated as 40. It was detected on rechecking that the value of 45 as wrongly copied as 15. Find the correct mean.

- (a) 43
- (b) 44
- (c) 45
- (d) 46

Sol. (a)

$$\text{Mean} = \frac{\text{Sum of all observations}}{\text{Number of observations}}$$

$$\text{or, } 40 = \frac{\text{Sum of all observations}}{10}$$

So, sum of all observations = 400

But this is incorrect sum, since one observation was copied wrongly.

SO, correct sum = Incorrect sum – Incorrect observation + correct observation

$$= 400 - 15 + 45$$

$$= 430$$

$$\text{Correct Mean} = \frac{\text{Correct Sum}}{\text{Number of observations}} = \frac{430}{10} = 43$$

Q2. The median of observations 11, 12, 14, 18, x+2, 20, 22, 25, 61 arranged in ascending order is 21. Find the value of x.

- (a) 18
- (b) 19
- (c) 20
- (d) 21

Sol. (b)

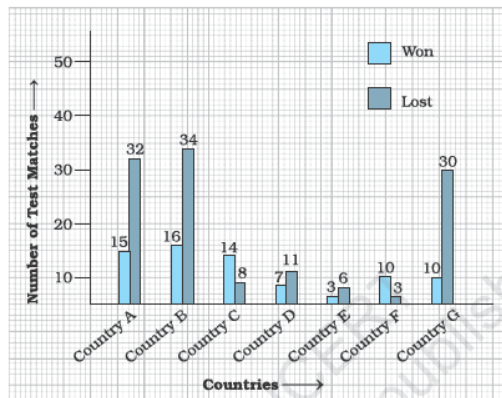
Median from data = $x+2$

Or, $21 = x + 2$

Or, $x = 21 - 2$

Or, $x = 19$

- Q3. The following double bar graph represents test matches results summary for Cricket Team of country X against different countries:



The difference between the number of matches won and lost is highest for which country against X?

- (a) Country A
- (b) Country B
- (c) Country G
- (d) Country D

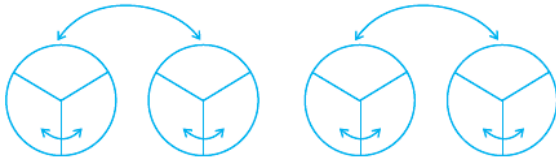
Sol. (c)

- Q4. How many $\frac{2}{3}$ kg pieces can be cut from a cake of weight 4 kg?

- (a) 5
- (b) 7
- (c) 9
- (d) 6

Sol. (d)

Observe the following figure representing 4 cakes each of 1 kg and try to give the answer.

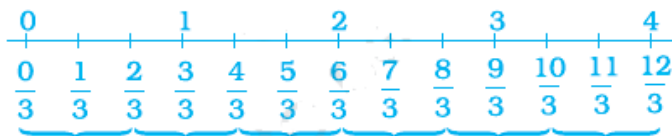


In the above figure we look for how many $\frac{2}{3}$'s are there in these 4 cakes?'

That is , $4 \div \frac{2}{3} = 4 \times \frac{3}{2} = 4 \times \frac{3}{2} = 6$

Alternate Method

This can be observed also in the following way.



We get the answer as 6

- Q5. Kavita had a piece of rope of length 9.5 m. She needed some small pieces of rope of length 1.9 m each. How many pieces of the required length will she get out of this rope?
- (a) 5
 (b) 7
 (c) 8
 (d) 3

Sol.

(a)
 The length of the rope = 9.5 m
 The length of a small piece of rope = 1.9 m
 Number of small pieces = $9.5 \div 1.9$ m

$$= \frac{9.5}{1.9} = \frac{9.5 \times 10}{1.9 \times 10}$$

$$= \frac{95}{19} = 5$$

So, she will get 5 small pieces of rope.

- Q6. Reshma uses $\frac{3}{4}$ m of cloth to stitch a shirt. How many shirts can she make with $2\frac{1}{4}$ m cloth?
- (a) $2\frac{3}{4}$
 (b) $2\frac{1}{4}$
 (c) $2\frac{5}{4}$

(d) None of these

Sol.

(b)

Study the following figure:

Let \square represent $\frac{1}{4}$ m

Then,

$$\frac{\overbrace{\square\square\square}^{1\text{ m}} \quad \overbrace{\square\square\square\square}^{1\text{ m}} \quad \overbrace{\square}^{\frac{1}{4}\text{ m}}}{\square\square\square} = \frac{9\text{ fourths}}{3\text{ fourths}} = 3$$

In fact, we calculated that "how many $\frac{3}{4}$ are in $2\frac{1}{4}$?" And it is calculated as.

$$2\frac{1}{4} \div \frac{3}{4} = \frac{9}{4} \div \frac{3}{4} = \frac{9}{4} \times \frac{4}{3} = \frac{9 \times 4}{4 \times 3} = \frac{9}{3} = 3$$

Thus, 3 shirts can be made with $2\frac{1}{4}$ m of cloth.

Q7. If a is an integer other than 1 and -1, match the following:

Column I

- (a) $a \div (-1)$
- (b) $1 \div (a)$
- (c) $(-a) \div (-a)$
- (d) $a \div (+1)$

Column II

- (i) a
- (ii) 1
- (iii) Not an integer
- (iv) -a

Sol. (a) \leftrightarrow (iv) (b) \leftrightarrow (iii) (c) \leftrightarrow (ii) (d) \leftrightarrow (i)

Q8. If Δ is an operation such that for integers a and b we have $a \Delta b = a \times a + b \times b - a \times b$, then find

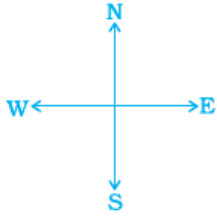
$(-3) \Delta 2$.

- (a) 18
- (b) 20
- (c) 19
- (d) 17

Sol. (c)

$$\begin{aligned} -3 \Delta 2 &= (-3) \times (-3) + 2 \times 2 - (-3) \times 2 \\ &= 9 + 4 - (-6) = 13 + 6 = 19 \end{aligned}$$

Q9. The angles between North and East and North and West are



- (a) Complementary angles
- (b) Supplementary angles
- (c) Both acute angles
- (d) Both obtuse angles

Sol. (b)

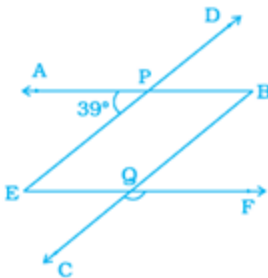
Q10. If two lines are intersected by a transversal, then the number of parts of interior angles on the same side of the transversal is

- (a) 1
- (b) 2
- (c) 3
- (d) 4

Sol. (b)

An angle (\angle) is formed by two rays with a common endpoint called the vertex (plural, vertices). Angles can be measured in degrees; $m\angle 1$ means the measure of $\angle 1$. The angles can be named $\angle XYZ$, $\angle 1$, or $\angle Y$. The vertex must be the middle letter.

Q11. In Fig. $AB \parallel EF$, $ED \parallel CB$ and $\angle APE$ is 39° . Find $\angle CQF$.



- (a) 142°

- (b) 143°
- (c) 144°
- (d) 141°

Sol.

(d)

Since $ED \parallel BC$ and AB is a transversal, so

So $\angle QBP = \angle APE$ [Corresponding angles]

Or $\angle QBP = 39^\circ$

Now, $AB \parallel EF$ and BC is a transversal.

Therefore, $\angle FQB = \angle QBF$ [Alternate Interior angles]

or $\angle FQB = 39^\circ$

Also, $\angle CQF + \angle FQB = 180^\circ$ [Linear pair]

So $\angle CQF + 39^\circ = 180^\circ$

or $\angle CQF = 180^\circ - 39^\circ$

or $\angle CQF = 141^\circ$

Q12. Out of a pair complementary angles, one is two – third of the other. Find the angles.

- (a) 45°
- (b) 36°
- (c) 60°
- (d) 50°

Sol.

(b)

Let one angle be x .

So, other angle = $90^\circ - x$

Thus, $\frac{2}{3}x = 90^\circ - x$

or $2x = 270^\circ - 3x$

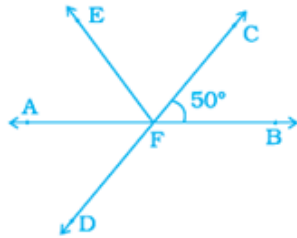
or $2x + 3x = 270^\circ$

or $5x = 270^\circ$

$$x = \frac{270^\circ}{5} = 54^\circ$$

so, one angle = 54° and the other angle = $90^\circ - 54^\circ = 36^\circ$

Q13. In Fig. , CD intersects the line AB at F, $\angle CFB = 50^\circ$ and $\angle EFA = \angle AFD$. Find the measured of $\angle EFC$.



- (a) 80°
- (b) 90°
- (c) 110°
- (d) 100°

Sol.

(a)

Let $\angle EFA = x$

Then $\angle AFD = x$.

It is given that CD intersects line AB at F.

Therefore, $\angle CFB = \angle AFD$

(Vertically opposite angles)

So, $x = 50^\circ$

But $\angle EFA = \angle AFD$ which gives $\angle EFA = 50^\circ$

Now $\angle CFB + \angle EFA + \angle EFC = 180^\circ$

[As AB is a straight line]

or, $50^\circ + 50^\circ + \angle EFC = 180^\circ$

or, $\angle EFC = 180^\circ - 100^\circ$

Thus, $\angle EFC = 80^\circ$

Q14. One fourth of a number is 20 less than the number itself. Find the number

- (a) $3/80$
- (b) $60/3$
- (c) $80/3$
- (d) $40/3$

Sol.

(c)

Let the number be x

So, one fourth of the number is $\frac{x}{4}$

$\frac{x}{4}$ is 20 less than the number itself. So, the required equation is

$$\frac{x}{4} = x - 20 \Rightarrow 80/3$$

- Q15. Anamika thought of a number. She multiplied it by 2, added 5 to the product and obtained 17 as the result. What is the number she has thought of?
- (a) 5
 - (b) 7
 - (c) 9
 - (d) 6

Sol. (d)
Let the number be x
 $2x + 5 = 17$
 $2x = 12$
 $x = 6$

- Q16. 150 has been divided into two parts such that twice the first part is equal to the second part. Find the part.
- (a) 50, 100
 - (b) 105, 45
 - (c) 35, 115
 - (d) 55, 95

Sol. (a)
Let the first part be $= x$
 \therefore Second part $= 2x$
Given
 $x + 2x = 150$
 $3x = 150$
 $x = 50$
 \therefore First part $= 50$
Second part $= 100$

- Q17. A girl is 28 years younger than her father. The sum of their ages is 50 years. Find the ages of the girl and her father.
- (a) 13 years and 37 years
 - (b) 11 years and 39 years
 - (c) 15 years and 35 years
 - (d) None of these

Sol. (b)

Let the age of her father is x

$$\therefore \text{girl's age} = x - 28$$

$$\text{Given : } x + x - 28 = 50$$

$$2x = 78$$

$$x = 39$$

Girl's age = 11 years

Father's age = 39 years

Q18. If one side of a square is represented by $18x - 20$ and the adjacent side is represented by $42 - 13x$. Find the length of the side of the square.

(a) 3

(b) 5

(c) 2

(d) 9

Sol. (2)

$$18x - 20 = 42 - 13x$$

$$31x = 62$$

$$x = \frac{62}{31} = 2$$

Q19. Which of the following cannot be the sides of a triangle?

(a) 3 cm, 4 cm, 5 cm

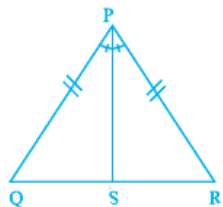
(b) 2 cm, 4 cm, 6 cm

(c) 2.5 cm, 3.5 cm, 4.5 cm

(d) 2.3 cm, 6.4 cm, 5.2 cm

Sol. (b)

Q20. In Fig., PS is the bisector of $\angle P$ and $PQ = PR$. Then $\triangle PRS$ and $\triangle PQS$ are congruent by the criterion

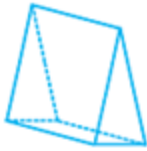


(a) AAA

- (b) SAS
- (c) ASA
- (d) Both (b) and (c)

Sol. (b)

Q21. The name of the solid in Fig. is:



- (a) Triangular pyramid
- (b) Rectangular prism
- (c) Triangular prism
- (d) Rectangular pyramid

Sol. (c)

Q22. All faces of a pyramid are always:

- (a) Triangular
- (b) Rectangular
- (c) Congruent
- (d) None of these

Sol. (a)

Q23. Total number of edges a cylinder has

- (a) 0
- (b) 1
- (c) 2
- (d) 3

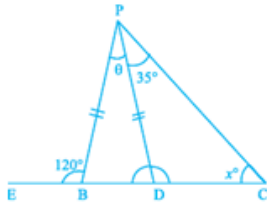
Sol. (a)

Q24. Lengths of sides of a triangle are 3 cm, 4cm and 5cm. The triangle is

- (a) Obtuse angled triangle
- (b) Acute – angled triangle
- (c) Right-angled triangle
- (d) An isosceles right triangle

Sol. (c)

Q25. In Fig. $PB = PD$. The value of x is



- (a) 85°
- (b) 90°
- (c) 25°
- (d) 35°

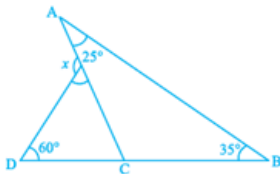
Sol. (c)

$$\angle PBD = 180 - 120 = 60 = \angle PDB$$

$$\therefore \angle PDB = 35^\circ + x^\circ$$

$$\therefore x^\circ = 60 - 35 = 25^\circ$$

Q26. From Fig. the value of x is



- (a) 75°
- (b) 90°
- (c) 120°

(d) 60°

Sol. (c)

$$\angle ACD = 25^\circ + 35^\circ$$

$$\angle ACD = 60^\circ$$

$$\begin{aligned}\text{Now } \angle x^\circ &= \angle D + \angle ACD \\ &= 60^\circ + 60^\circ = 120^\circ\end{aligned}$$

Q27. The complementary of 20° is _____.

(a) 70°

(b) 80°

(c) 90°

(d) 60°

Sol. (a)

Let the measure of its complementary be x .

A pair of angles is complementary if the sum of their measures is 90° .

$$\Rightarrow 20 + x = 90$$

$$\Rightarrow x = 90 - 20$$

$$\Rightarrow x = 70^\circ$$

Hence the complement of 20° is 70°

Q28. Which of the following is an example of a pair of congruent shapes?

(a) Two squares of the same side length.

(b) Two circles of different radii.

(c) Two squares of different side lengths.

(d) Two rectangles of the same length, but different breadths.

Sol. (a)

Q29. If the supplement of an angle is one- third of itself, then the measures of the angle and its supplement are ____.

- (a) 140° and 40°
- (b) 145° and 35°
- (c) 125° and 55°
- (d) 135° and 45°

Sol. (d)

Let the measures of the angle be x° .

Then, the measure of its supplementary angle = $(180 - x)^\circ$

As per problem,

$$180 - x = \frac{1}{3}x$$

$$\Rightarrow 3(180 - x) = x$$

$$\Rightarrow 540 - 3x = x$$

$$\Rightarrow 4x = 540$$

$$\Rightarrow x = 135$$

Measure of the angle = $x^\circ = 135$

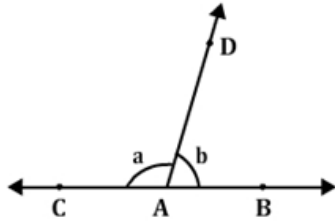
Then measure of its supplement = $180 - x$

$$= 180 - 135$$

$$= 45$$

Hence, the measures of the angle and its supplement are 135° and 45°

Q30. In the figure below, $\angle BAD$ and $\angle DAC$ form a linear pair. If $a - b = 60^\circ$, then the values of a and b respectively are ____.



- (a) 60° and 120°
- (b) 150° and 30°
- (c) 120° and 60°
- (d) 130° and 50°

Sol. (c)

From the figure, $\angle BAD$ and $\angle DAC$ form a linear pair.

$$\Rightarrow a + b = 180 \dots \dots (1)$$

$$a - b = 60 \dots \dots (2)$$

Adding (1) and (2), we get

$$2a = 240$$

$$\Rightarrow a = 120^\circ$$

Substituting $a = 120^\circ$ in (1), we get

$$120 + b = 180^\circ$$

$$\Rightarrow b = 180 - 120$$

$$\Rightarrow b = 60^\circ$$

Hence, the values of a and b respectively are 120° and 60°