

CLASS 7 CBSE SAMPLE PAPER

Model question paper – Mathematics

Half Yearly Examination

Time: 3 hrs

Max: 80 Marks

General Instructions:

- Section A consists of 4 questions carrying 1 mark each.
 - Section B consists of 16 questions carrying 2 marks each.
 - Section C consists of 12 questions carrying 3 marks each.
 - Section D consists of 2 questions carrying 4 marks each.
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Section A

1. The value of $3 \div (-1)$ is -----
2. The value of x for which the expression $2x + 5 = 11$ is -----
3. 0.2×0.2 is equal to -----
4. Angles which are supplementary and vertically opposite are -----

Section B

5. In a quiz, positive marks are given for correct answers and negative marks are given for incorrect answers. If Manu's scores in five successive rounds were 25, -6, 15, -10 and -4. What was his total score at the end?

6. Find the product of $\frac{5}{23}$ and its reciprocal?

7. If $y + 5 = 10$, find the value of $4y - 4$.

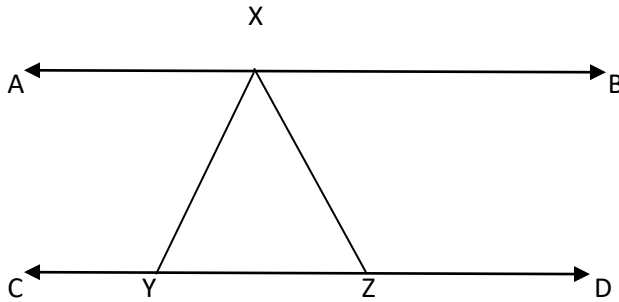
8. Identify terms which contain x and give the coefficient of x :

$$12xy^2 + 5$$

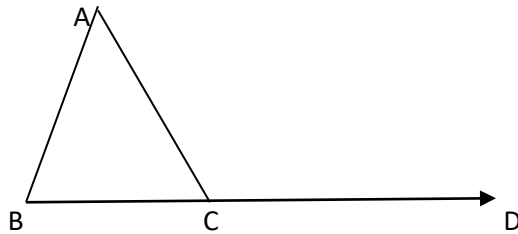
9. The age of Ramu is 4 times the age of Sonu and the sum of their ages is 100. Find the ages of Ramu and Sonu?

10. Is it possible to have a triangle with sides 4 cm, 5 cm and 7 cm? Give reason.

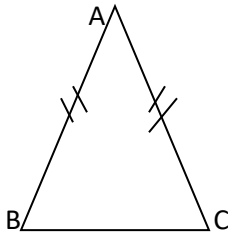
11. In a right angled triangle, if an angle measures 45° , then find the measure of the third angle.
12. If $\angle P$ and $\angle Q$ are supplementary angles and the measure of $\angle P$ is 100° , then find the measure of $\angle Q$?
13. In the given figure, if AB is parallel to CD , $\angle XZD = 110^\circ$ and $\angle ZXY = 60^\circ$, find the measure of $\angle AXY$?



14. Find the measures of angle BAC and angle ACB , given angle $ACD = 130^\circ$ and angle $ABC = 50^\circ$.



15. In an isosceles triangle ABC , $AB = AC$.



If angle $B = 70^\circ$, find angles A and C ?

16. How many angles are formed when two lines intersect?
17. In a quiz competition the marks scored by 10 students are as follows
18, 16, 14, 20, 6, 9, 1, 7, 17, 15. Find the average score?
18. Find the product of $-27 \times -10 \times 8$.
19. Raju has read $\frac{2}{3}$ portion of the book while Rani read $\frac{3}{5}$ portion of the book. Who read more?
20. Find the value of x in the equation $3x - 7 = 11$.

Section C

21. Find the value of the following

a) 3.05×2.5

b) $1.25 \div 0.25$

22. In a class test of Mathematics, the marks scored by 7 students are 47, 45, 46, 44, 49, 46 and 46. Find the mean, median and mode?

23. Write the algebraic expression for the following:

a) Two times a number more than 7 is 12.

b) 11 subtracted from a number x is 21.

c) Two times the sum of a and b is 12.

24. Solve the following equations.

a) $3x + 5 = 17$

b) $2y - 9 = 1$

c) $\frac{z}{4} = 32$

25. In a class test containing 10 questions, 5 marks are awarded for every correct answer and (-2) marks are awarded for every incorrect answer and zero for questions not attempted.

i) Mohan gets 4 correct and 6 incorrect answers. What is his score?

ii) Reshma gets 5 correct answers and 5 incorrect answers, what is her score?

iii) Heena gets 2 correct and 5 incorrect answers out of seven questions she attempts. What is her score?

26. A rectangular sheet of paper is $12\frac{1}{2}$ cm long and $10\frac{2}{3}$ cm wide. Find its perimeter?

27. Multiply and reduce to lowest form (if possible)

i) $\frac{2}{3} \times 2\frac{2}{3}$

ii) $3\frac{2}{5} \times \frac{4}{7}$

28. Shyama bought 5kg 300 g apples and 3 Kg 250 g mangoes .Sarala bought 4 Kg 800 g oranges and 4 Kg 150 g bananas. Who bought more fruits?

29. The rainfall (in mm) in a city on 7 days of a certain week was recorded as follows

- i) Find the range of the rainfall in the above data.
- ii) Find the mean rainfall for the week.
- iii) On how many days was the rainfall less than the mean rainfall?

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Rainfall(in mm)	0.05	12.2	2.1	2.05	20.5	5.5	1.0

30. Set up equations and solve them to find the unknown numbers in the following cases.

- a) Add 4 to eight times a number you get 60.
- b) One-fifth of a number minus 4 gives 3.
- c) When I subtracted 11 from twice a number, the result was 15.

31. Triangle ABC is right angled at C. If AC = 5cm and BC = 12 cm. Find the length of AB.

32. Ramu's father's age is 5 years more than three times Ramu's age. Find Ramu's age if his father is 44 years old?

Section D

33. A tree is broken at a height of 5m from the ground and its top touches the ground at a distance of 12m from the base of the tree. Find the original height of the tree.

34. Number of children in 6 different classes are given below. Represent the data on a bar graph.

Class	V	VI	VII	VIII	IX	X
Number of children	135	120	95	100	90	80

Answer the following:

- i) Which class has the maximum number of children? And the minimum?
- ii) Find the ratio of student's of class sixth to the students of class VIII

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Answers:

1. -3

2. 3

3. 0.04

4. 90°

5. Manu's total score at the end = $25 + (-6) + 15 + (-10) + (-4)$

$25 + 15 + (-6) + (-10) + (-4) = 40 + (-20) = 20$ marks.

6. Reciprocal of $\frac{5}{23}$ is $\frac{23}{5}$.

$$\text{Product} = \frac{5}{23} \times \frac{23}{5} = 1$$

7. Given $y + 5 = 10$, then $y = 10 - 5 = 5$

Now $4y - 4 = 4 \times 5 - 4 = 20 - 4 = 16$

8. $12xy^2 + 5$

Terms which contain x is $12xy^2$ and coefficient of x is $12y^2$.

9. Let Sonu's age be x, then Ramu's age = $4x$.

Given sum of their ages = 100.

Therefore, $x + 4x = 100$.

i.e, $5x = 100$

$x = 100 \div 5 = 20$.

So Sonu's age = 20 and Ramu's age = $4 \times 20 = 80$ years.

10. Given three sides are 4cm, 5 cm and 7 cm.

If these sides form a triangle, then sum of two sides $>$ Third side.

Sum of two sides	Third side	Greater
$4 + 5 = 9$	7 cm	Yes
$4 + 7 = 11$	5 cm	Yes
$5 + 7 = 12$	4 cm	Yes

All these cases, sum of 2 sides is greater than the third side.

So it is possible to have a triangle with 4 cm, 5 cm, and 7 cm.

11. In a right angled triangle, one angle must be 90° .

Given one angle is 45° . So third angle = $180 - (90 + 45) = 180 - 135 = 45^\circ$.

12. Two angles are supplementary when they add up to 180 degrees.

Given P and Q are supplementary angles.

Therefore, since angle P = 100° then angle Q = 80°

13. Since AB is parallel to CD, angle XZD = angle ZXA.

But given angle XZD = 110° and angle ZXY = 60° .

So angle ZXA = angle ZXY + angle YXA.

$$110^\circ = 60^\circ + \text{angle YXA}$$

$$\text{Angle YXA} = 110 - 60 = 50^\circ$$

14. By exterior angle sum property of triangles, Measure of exterior angles = Sum of the two opposite interior angles.

Therefore, Angle ACD = Angle ABC + Angle BAC

Given ACD = 130° and ABC = 50°

So, $130 = 50 + \text{angle BAC}$

$$\text{Angle BAC} = 130 - 50 = 80^\circ$$

15. Since it is an Isosceles triangle, the angles opposite to the equal sides are equal.

Therefore, angle B = angle C.

Since it is given that angle B = 70° , angle C = 70° .

By Angle Sum Property of triangles, Sum of three angles = 180° .

So, angle A + angle B + angle C = 180° .

$$\text{Angle A} + 70 + 70 = 180$$

$$\text{Angle A} = 180 - 140 = 40^\circ.$$

16. When two lines intersect, four angles are formed.

17. Average score = $\frac{\text{sum of the observations}}{\text{Number of observations}}$

$$= \frac{18+16+14+20+6+9+1+7+17+15}{10} = \frac{123}{10} = 12.3$$

$$18. -27 \times -10 \times 8 = 270 \times 8 = 2160$$

19. Raju read $\frac{2}{3}$ portion of the book.

Rani read $\frac{3}{5}$ Portion of the book.

Comparing $\frac{2}{3}$ and $\frac{3}{5}$.

Equivalent fractions of $\frac{2}{3}$ are $\frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}$.

Equivalent fractions of $\frac{3}{5}$ are $\frac{6}{10}, \frac{9}{15}$.

Here like fractions are $\frac{10}{15}$ and $\frac{9}{15}$.

Since $\frac{10}{15} > \frac{9}{15}, \frac{2}{3} > \frac{3}{5}$.

So Taju read more.

$$20. 3x - 7 = 11$$

$$3x = 11 + 7 = 18$$

$$x = \frac{18}{3} = 6$$

$$21. a). 3.05 \times 2.5 = 7.625$$

$$b) 1.25 \div 0.25 = 5$$

22. Marks scored by 7 students are 47, 45, 46, 44, 49, 46 and 46.

$$a) \text{ Mean} = \frac{\text{sum of the observations}}{\text{Number of observations}} = \frac{47+45+46+44+49+46+46}{7} = \frac{323}{7} = 46.143$$

b) To find median, first arrange the numbers in ascending order.

44, 45, 46, 46, 46, 47, 49.

So the middle number is 46. Therefore median = 46.

c) Mode is the most frequently occurred data.

Here 46 occurred more number of times.

Therefore, Mode = 46.

$$23. a) 2x + 7 = 12$$

$$\text{b) } x - 11 = 21$$

$$\text{c) } 2(a + b) = 12$$

$$24. \text{ a) } 3x + 5 = 17$$

$$3x = 17 - 5 = 12$$

$$x = \frac{12}{3} = 4$$

$$\text{b) } 2y - 9 = 1$$

$$2y = 1 + 9 = 10$$

$$y = \frac{10}{2} = 5$$

$$\text{c) } \frac{z}{4} = 32$$

$$z = 32 \times 4 = 128.$$

25. Marks for correct answers = 5

Marks for incorrect answers = -2

Marks for not attempted = 0

i) Mohan gets

$$4 \times 5 + 6 \times -2 = 20 + -12 = 8$$

ii) Reshma gets

$$5 \times 5 + 5 \times -2 = 25 + -10 = 15$$

iii) Heena gets

$$2 \times 5 + 5 \times -2 = 10 + -10 = 0$$

$$26. \text{ Given length of a rectangle} = 12 \frac{1}{2} = \frac{12 \times 2 + 1}{2} = \frac{25}{2}$$

$$\text{Breadth} = 10 \frac{2}{3} = \frac{10 \times 3 + 2}{3} = \frac{32}{3}$$

$$\text{Perimeter} = 2(l + b) = 2\left(\frac{25}{2} + \frac{32}{3}\right) = 2\left(\frac{25 \times 3 + 32 \times 2}{2 \times 3}\right) = 2\left(\frac{139}{6}\right) = 46.33 \text{ cm.}$$

$$27. \text{ a) } \frac{2}{3} \times 2 \frac{2}{3} = \frac{2}{3} \times \frac{2 \times 3 + 2}{3} = \frac{2}{3} \times \frac{8}{3} = \frac{16}{9}$$

$$\text{b) } 3 \frac{2}{5} \times \frac{4}{7} = \frac{3 \times 5 + 2}{5} \times \frac{4}{7} = \frac{17}{5} \times \frac{4}{7} = \frac{68}{35}.$$

28. The amount of apple bought by Shyama = 5 kg 300g = 5.300 kg

The amount of Mangoes = 3 kg 250 g = 3.250 kg

Total weight = 5.300 + 3.250 = 8.550 kg

The amount of oranges bought by Sarala = 4 kg 800g = 4.800 kg

The amount of bananas bought = 4 kg 150 g = 4.150 kg

Total weight = 4.800 + 4.150 = 8.950 kg

So Sarala bought more fruits.

29. a) Range = Highest value – Lowest value = 20.50 – 0.05 = 20.45

b) Mean rainfall = $\frac{\text{Sum of all observations}}{\text{Number of observations}} = \frac{0.05+12.2+2.1+2.05+20.5+5.5+1.0}{7} = \frac{43.4}{7} = 6.2$

c) 5 days (Mon, Wed, Thu, Sat, Sun)

30. a) $4 + 8x = 60$

$8x = 60 - 4 = 56$

$x = 56 \div 8 = 7$

b) $\frac{1}{5}y - 4 = 3$

$\frac{1}{5}y = 3+4 = 7$

$Y = 5 \times 7 = 35$

c) $2z - 11 = 15$

$2z = 15 + 11 = 26$

$Z = 26 \div 2 = 13$

31. By Pythagoras theorem, Square of the hypotenuse = sum of the squares of its legs.

Here legs are given by 5 and 12.

So square of the hypotenuse = $5^2 + 12^2 = 25 + 144 = 169$.

Length of hypotenuse = 13 cm.

32. Let Ramu's age be x.

Then Ramu's age = 5 + 3x.

If Ramu's father's age is 44, then $5 + 3x = 44$.

$$3x = 44 - 5 = 39.$$

$$X = 39 \div 3 = 13 \text{ years.}$$

33. By Pythagoras theorem, Square of hypotenuse = sum of the square of its legs.

$$\text{Square of hypotenuse} = 5^2 + 12^2 = 25 + 144 = 169.$$

So length of hypotenuse = 13.

$$\text{Original height of tree} = 5 + 13 = 18 \text{ m}$$

34. Do the construction.

i) V th – Maximum

X th – Minimum

$$\text{ii) Ratio} = 120:100 = \frac{120}{100} \div \frac{20}{20} = \frac{6}{5} = 6:5$$

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