Practice Set 1

A Whole Content Based Test for Class 8th Mathematics Asiad

1. The product of a rational number and its multiplicative inverse is always equal to
   - a 0
   - b -1
   - c 1
   - d its reciprocal

2. The value of m for given expression $3_m \mid 3_{-3} = 3_4$ is
   - a 6
   - b 5
   - c 1
   - d 0

3. Which of the following numbers has no reciprocal?
   - a 1
   - b -1
   - c 0
   - d 5

4. The value of the given expression
   $$\frac{7.25 \cdot 7.25 \cdot 7.25 + 175 \cdot 175 \cdot 175...}{9} \text{ is}$$
   - a 42.94
   - b 40.42
   - c 24.49
   - d None of these

5. Simplify $\dfrac{\sqrt{441} + \sqrt{196}}{\sqrt{1024} - \sqrt{324}}$.
   - a $\dfrac{2}{5}\dfrac{5}{}$
   - b $\dfrac{2}{3}\dfrac{5}{}$
   - c $\dfrac{}{3}$
   - d $\dfrac{}{2}$

6. $\sqrt{41 - 29 - 18 - 4}$ is equivalent to
   - a 2
   - b 4
   - c 6
   - d 5

7. Which value of z for equation
   $z - \dfrac{4 + 3zz - 2 + 2z}{24} = 2z -$ is true?
   - a 4
   - b 0
   - c 10
   - d 1

   Direction (Q. No. 8) Which of the following options is needed to answer the question?
   - a Only I is needed to answer the question
   - b Both I and II are needed to answer the question
   - c Only II is needed to answer the question
   - d Either I or II is sufficient

8. How old is Rakesh?
   - I. Five years before, the age of Rakesh and his father was in ratio 1 : 3.
   - II. Five years hence, sum of their ages will be 50 yr.

9. RENT is a rectangle. Its diagonals meet at O. The value of x, if $OR = 2x + 4$ and $OT = 3x + 1$, is
   - a 4
   - b 3
   - c 5
   - d 6

10. Two numbers are in the ratio 4 : 5. If sum of these two numbers is 27. Then, the product of numbers is
    - a 190
    - b 180
    - c 225
    - d 240

11. If the measure of two adjacent angles A and B of a parallelogram are in the ratio 3 : 2, then the measure of the angle opposite to angle A is
    - a 72°
    - b 108°
    - c 90°
    - d 144°

12. One of the factors of the quotient when the polynomial $y_3 - 2y_2 - 9y + 18$ is divided by binomial $y - 2$.
    - a $(y + 3)$
    - b $(3 - y)$
    - c $(2 - y)$
    - d $(y_2 + 9)$

13. Sum of three numbers is 105. If the ratio between first and second numbers is 2 : 3 and between second and third numbers is 4 : 5. Then, the second number is
    - a 35
    - b 24
    - c 36
    - d 45

14. Evaluate and mark the correct option.
    $$[(24_2 + 7_2)_{1/2}]_3$$
    - a 625
    - b 25
    - c 1025
    - d None of these

15. If $x * y = x + y - xy\sqrt{}$, then the value of $7 * 63$ is equal to
    - a 63
    - b 49

c 21   d 7

16. If $(2_{3x-1} + 10) | 6 = 7$, then x is equal to

  a −2   b 0

  c 1   d 2

17. If a rational number is such that when we
    multiply it by $\frac{42}{53}$ and add of it to the
    product, we get $\frac{11}{5}$. Then, the number is
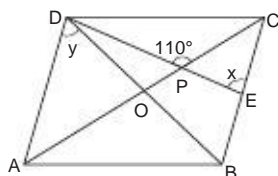
  a $\frac{1}{2}$ b $\frac{3}{2}$
    3   4
  c $\frac{}{2}$ d $\frac{}{5}$

18. In the given figure, if ABCD is a rhombus and
    BCD = 80 °, then the values of x and y
    respectively are

  a 42° and 20°
  b 70° and 50°
  c 80° and 30°
  d 50° and 40°

19. Which of the property of rational number is
    followed by the given expression?
    $\frac{4}{5} \big(\frac{24}{55} \big\} = \frac{424}{555} \cdot \div \cdot \big(\square \big\} - - - \frac{4}{5} \big)$

  a Commutativity
  b Associativity
  c Distribution of multiplication over
    addition
  d All of the above

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20. If $\frac{25 \cdot a_{-4}}{_{-3-8}5 \cdot 10 \cdot a} = x \cdot a_4$. Then, the value of
    x is

  a 5_3 b 5_4
  c $\frac{1}{2} \cdot 5_4$ d 5_2

21. The value of the expression $\frac{4z_2 - 9y_2}{2z + 3y}$ is

  a 1
  b 0
  c 4z + 9y

d 2z − 3 y

22. Sohan's father is 25 yr younger than
    Sohan's grandfather and 25 yr older than
    Sohan. The sum of the ages of all the three
    after 10 yr will be 180 yr. The present age
    of Sohan's grandfather is

  a 70 yr
  b 85 yr
  c 50 yr
  d 75 yr

23. A shopkeeper earns a profit of 12% after
    selling a book at 10% discount on printed
    price. Then, the ratio of the cost price and
    printed price of the book is

  a 45 : 56

  b 50 : 61

  c 99 : 125

  d None of the above

Direction (Q. No. 24) Which of the following
options is needed to answer the question?

  a Only I is needed to answer the question
  b Both I and II are needed to answer the
    question
  c Only II is needed to answer the
    question
  d Either I or II is sufficient

24. How much time it will be taken by the
    train to cross a person standing on the
    platform, if

    I. speed to train is 60 km/h and it crosses
       a bridge of equal length in 1 min?

    II. it also crosses a train coming from
        opposite direction in 45 s?

25. If z = 6, then the value of $20 z z_3 \sqrt{2z_2}$ is

  a 1000   b 1040
  c 1400   d 1440

26. For how many 3-digit perfect cubes, the
    sum of the digits is not a perfect square?

  a 1   b 2
  c 3   d 4

27. If 4 men or 8 women can complete a work
    in 8 days. A contractor starts working with
    6 women and 1 man and due to some
    emergency he need to complete the work
    in 4 days. How much more men he
    needed?

a 4   b 3
c 6   d 8

a $x^2 + 6x − 12$ b $x^2 − 6x + 8$

c $x^2 − 8x + 12$ d $x^2 − 8x + 16$

28. The value of expression
$$\frac{\left(\frac{5}{3}\right)^{-2} \cdot \left(\frac{3}{5}\right)^{2}}{\left(\frac{2}{5}\right)^{-2} \cdot \left(\frac{5}{5}\right)^{2}}^{-3} \text{ is}$$

a 1   b −1
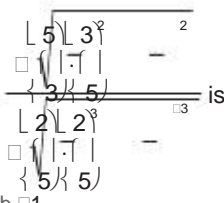
c 2   d $\frac{25}{6}$

30. In the given figure, if RISK and CLUE are parallelograms. Then, the value of x is

a 50°
b 60°
c 80°
d 70°
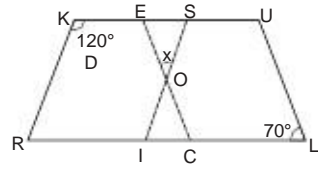
29. An expression is to be written in the form of $x^2 − (a + b)x + ab$, where a and b, (a, b > 0) are such that sum of their squares is 20 and difference of their squares is 12. The expression is

Solutions

® $4 + 16 = 4z − 2z$

® $20 = 2z ® z = 10$

8. (b)

9. (b) Given, RENT is a rectangle with diagonals RN and ET.
Now, since diagonals of a rectangle are equal and bisect each other.

1. (c) Let $\frac{a}{b}$ be the rational number.

Its multiplicative inverse $= \frac{b}{a}$

So, we have $\frac{a}{b} \cdot \frac{b}{a} = 1$

2. (c) $3^m \cdot 3^{−3} = 3^4$
® $3^m = 3^4 \cdot 3^3$
® $3^m = 3^1$
[by comparing] ® m = 1

3. (c) 0 has no reciprocal.

4. (a) Given
$$\frac{7.25 \cdot 7.25 \cdot 7.25 + 175 \cdot 175 \cdot 175...}{9}$$
$$= \frac{9}{3(7.25) + (175)3.}$$
Using identity, $(a + b)^3 = (a + b)(a^2 + b^2 − ab)$
$$= \frac{(7.25 + 175)[(7.25)^2 + (175)^2 − (7.25)(175)]...}{9}$$
$$= \frac{9(52.56 + 3.06 − 12.68)}{9}$$
$$= \frac{42.94}{9}$$

5. (d) Consider,
$$\frac{\sqrt{441} + \sqrt{196}}{\sqrt{1024} − \sqrt{324}} = \frac{21 + 14}{32 − 18} = \frac{35}{14} = \frac{5}{2}$$

6. (c) Consider,
$$\sqrt{41 − 29 − 18 − \sqrt{4}}$$
$$= \sqrt{41 − 29 − 18 − 2}$$
$$= \sqrt{41 − 29 − 16} = \sqrt{41 − 29 − 4}$$
$$= \sqrt{41 − 25} = \sqrt{41 − 5} = \sqrt{36} = 6$$

7. (c) Given, $z − \frac{z − 2 + 2z}{42} = 2z − \frac{4 + 3z}{4}$
$(4z − z + 2 − 2z)2 = (4z − 4 − 3z)4$
® $(z + 2)2 = (z − 4)4$
® $2z + 4 = 4z − 16$

$2x + 4 = 3x + 1 ® x = 3$

10. (b) Given,
$\frac{a}{b} = \frac{4}{5}$ ... (i)
and $a + b = 27$ ... (ii)
From Eqs. (i) and (ii), we get
$\frac{4}{5}b + b = 27 ® \frac{49}{55} b = 27 ® b = 15$
$4a = 12$
So, $a \cdot b = 15 \cdot 12 = 180$

11. (b) Let angles be 3x and 2x.
Then, $3x + 2x = 180° ® x = 36°$
Angle opposite to $A = 3x = 3 \cdot 36° = 108°$

12. (a) Consider, $y^3 − 2y^2 − 9y + 18$
$= y^2(y − 2) − 9(y − 2)$
$= (y^2 − 9)(y − 2)$
So, $\frac{y^3 − 2y^2 − 9y + 18}{y − 2} = \frac{(y^2 − 9)(y − 2)}{y − 2}$
$= y^2 − 9 = (y − 3)(y + 3)$

13. (c) Let the three numbers be a, b and c.
According to the question,
$a + b + c = 105$
$\frac{a}{b} = \frac{2}{3}$ and $\frac{b}{c} = \frac{4}{5}$

We have,

$$b = \frac{4}{5}c$$

Also,

$$\frac{a}{b} \cdot \frac{b}{c} = \frac{24}{35}$$

$$\frac{a}{c} = \frac{8}{15}$$

$$a = \frac{8}{15}c$$

So, we have

$$\frac{84}{155}c + c + c = 105$$

$$8c + 12c + 15c = 105 \cdot 15$$

$$35c = 105 \cdot 15$$

$$c = 3 \cdot 15 = 45$$

So, $b = \frac{4}{5} \cdot 45 = 36$

14. (d) Consider,
$$[(24_2 + 7_2)_{1/2}]_3 = [(625)_{1/2}]_3$$
$$= [25]_3 = 15625$$

15. (b) Given $x * y = x + y \square xy$
$$47 * 63 = 7 + 63 \square 7 \cdot 63 = 70 \square 21 = 49$$

16. (d) $(2_{3x\square1} + 10) \mid 6 = 7$
$$\square 2_{3x\square1} + 10 = 7 \cdot 6$$
$$\square \quad 2^{3x\square1} = 42 \square 10$$
$$\square \quad 2^{3x\square1} = 2_5 [$$
$$\because 32 = 2_5]$$

[by comparing] $\square 3x \square 1 = 5$
$$\square 3x = 6 \square x = 2$$

17. (c) Let the number be x.

According to the question, $x + x = \frac{\square 1142}{535}$

$$12x + 10x \square 1122x$$
$$\frac{}{3155} = \square 11 \square = \square$$

$$\square x = \square \frac{3}{2}$$

18. (b) Given, DPC = 110° and BCD = 80°

In $\square\Delta OP$,
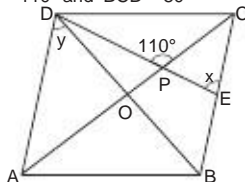
DOP + ODP = 110° [exterior angle theorem]

490° + ODP = 110° [diagonals of rhombus intersect each other at 90°]

4 ODP = 20°

Now, AD| BC and DE is the transversal.|

$\because x = y + 20°$

From the given options, only option (b) satisfies the relation.

19. (c)

20. (c)
$$\frac{25 \cdot a_{\square4}}{5_{\square3} \cdot 10 \cdot a_{\square8}} = x \cdot a_4$$

$$\frac{(5)_2}{5_{\square3} \cdot 5 \cdot 2} \square \cdot a_4 = x \cdot a_4$$

® $\frac{5_{2+3\square1}}{2} \cdot a_4 = x \cdot a_4$

$$\frac{1}{2} \cdot 5_4 \cdot a_4 = x \cdot a_4 ®$$

$$x = \frac{\square}{2} \cdot 5_4 ®$$

21. (d) Consider,
$$\frac{4z \square 9y}{2z + 3y} = \frac{(2z)_2 \square (3y)_2}{2z + 3y} = \frac{(2z \square 3y)(2z + 3y)}{(2z + 3y)(2z + 3y)} = 2z \square 3y$$

22. (d) Let present age of Sohan's grandfather be x yr.
Then, age of father = (x $\square$ 25) yr
and age of Sohan = (x $\square$ 25) $\square$ 25 yr
According to the question,
After 10 yr,
(x + 10) + (x $\square$ 25 + 10) + (x $\square$ 25 $\square$ 25 + 10) = 180
® 3x + (10 $\square$ 25 + 10 $\square$ 50 + 10) = 180
® 3x + (30 $\square$ 75) = 180
® 3x $\square$ 45 = 180
® 3x = 180 + 45 ® 3x = 225
$$x = \frac{225}{3} = 754$$
Hence, the present age of Sohan's grandfather is 75 yr.

23. (a) Let printed price be ` 100.
Then, SP after 10% discount = ` (100 $\square$ 10) = ` 90
Profit per cent earned 12%
CP of article = ` $90 \cdot \frac{100}{112} = \frac{1125}{14}$
Ratio of CP : Printed price = $\frac{1125}{14}$: 100 = 45 : 564

25. (d) Consider, $20z \sqrt{z_3 \square 2z_2}$
$$= 20z \cdot z \sqrt{z \square 2} = 20\sqrt{36 \cdot 6 \square 2}$$
$$= 20 \cdot 36 \cdot 2 = 1440$$

26. (d) 3-digit perfect cubes are 125, 216, 343, 512, 729.
Only sum of digits of 125 is a perfect cube (= 8).

27. (a) 4 men = 8 women
® 1 man = 2 women
So, we have
6 women + 1 man = 6 women + 2 women = 8 women
8 women complete work in 8 days.
To complete work in 4 days, number of women required
$$= \frac{8 \cdot 8}{4} = 16 \text{ women}$$
® 16 women = 6 women + 10 women
= 6 women + 5 men
Number of extra men = 5 $\square$ 1 = 4

28. (a) Consider,
$$\frac{\square\sqrt{\left(\frac{5}{3}\right)_{\square3}}\square}{\square\sqrt{\left(\frac{2}{5}\right)_{\square2}}\square} = \frac{\sqrt{\left(\frac{5}{3}\right)^{2\cdot2}}}{\sqrt{\left(\frac{2}{5}\right)^{3\cdot3}}} = \frac{\square1}{\square1} = 1$$

29. (b) Given, $x_2 \square (a + b)x + ab$
$a_2 + b_2 = 20$ [given]
and $a_2 \square b_2 = 12$ [given]
On solving above equations, we get
a = 4, b = 2 [where, a, b > 0]
Expression $= x_2 \square 6x + 8$

30. (a) In parallelogram RISK, K = 120°
4 R = 180° $\square$ 120° = 60°
S = R = 60°

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and in parallelogram CLUE,
$$L = E = 70°$$
In $\square OE\Sigma$, $E + S + O = 180°$
$$®70° + 60° + O = 180°$$
$$®130° + x = 180°$$
$$4x = 50°$$