

SECTION A

1. Two line segments are congruent if -----
2. The ratio of 15 kg to 210 g is -----
3. The reciprocal of $\frac{-4}{9}$ is -----
4. $(\frac{-1}{2})^0 =$ -----

SECTION B

5. If triangle ABC is congruent to triangle FED under the correspondence ABC corresponds to FED, write all the corresponding congruent parts of the triangles.
6. If angles of a triangle are in the ratio 2:3:4, find the value of each angle.
7. The population of a city decreased from 25000 to 24500. Find the percentage decrease.
8. Reduce to standard form.

a) $\frac{36}{-24}$

b) $\frac{-3}{-15}$

9. Find

a) $\frac{5}{4} + (\frac{-11}{4})$

b) $\frac{9}{2} \times (\frac{-7}{4})$

10. Find the area of a square park whose perimeter is 320 m.
11. Simplify and express the result in power notation.

$$(\frac{3}{4})^{17} \div (\frac{3}{4})^4$$

12. If $x = -2$, find the value of $2x^2 + 3x - 2$.
13. Simplify and write in exponential form.

$$(6^2 \times 6^4) \div 6^3$$

14. One of the sides and the corresponding height of a parallelogram are 5 cm and 3 cm respectively. Find the area of the parallelogram.
15. Find the whole quantity if 5% of it is 600.

16. Collect like terms and simplify the expression

$$12m^2 - 9m + 5m - 4m^2 - 7m + 10$$

17. Subtract $-x^2 + 10x - 5$ from $5x - 10$

18. Simplify $21.385 + 10.25 - 11.53$

19. Cost of an item is Rs 50. It was sold with a profit of 12%. Find the selling price?

20. Simplify $7x^2y - 4xy + z + x^2y + 4xy$

SECTION C

21. Solve

a) $\frac{5}{3} + \frac{3}{5}$

b) $\frac{7}{24} - \frac{7}{36}$

c) $\frac{3}{10} \times (-90)$

22. Jiya purchased a laptop for Rs 35000 and sold it for Rs 30000. Find his loss or gain percentage.

23. Express each of the following numbers using exponential notation

a) 625

b) 343

24. You have Rs 2400 in your account and the interest rate is 5%. After how many years would you earn Rs 240 as interest.

25. Find the value of the following expressions when $n = -2$

a) $5n - 2$

b) $5n^2 + 5n - 2$

c) $n^3 + 5n^2 + 5n - 2$

26. Simplify $\frac{25 \times 5^2 \times t^8}{10^3 \times t^4}$

27. A 3m wide path runs outside and around a rectangular park of length 125m and breadth 65 cm. Find the area of the path?

28. The radius of a circular pipe is 7 cm. What length of a tape is required to wrap once around the pipe?

29. Find the perimeter of the rectangle whose length is 24 cm and a diagonal is 25 cm.

30. Cost of a television is Rs 15500. It was sold with a loss of 8%. Find the selling price?

31. From the sum of $3x - y + 11$ and $-y - 11$, subtract $3x - y - 11$.

32. Find percentage of increase or decrease:

a) Price of shirt decreased from Rs 280 to Rs 210.

b) Marks in a test increased from 20 to 30.

SECTION D

33. A wire is in the shape of a square of length 44 cm. If the wire is re bent into a circle, find its radius. Also find the area of the circle?

34. Construct a triangle PQR, given that $PQ = 3$ cm, $QR = 5.5$ cm and angle $PQR = 60^\circ$.

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Answers:

1. if they have the same length.

2. 15 kg: 210g

1 kg = 1000g, then 15 kg = 15000g.

$$15000:210 = \frac{15000}{210} = \frac{1500}{21} \div \frac{3}{3} = \frac{500}{7} = 500:7$$

3. $\frac{-9}{4}$

4. One

5. Corresponding sides are AB & FE, BC & ED, AC & FD.

Corresponding angles are A & F, B&E, C& D.

6. Sum of the three angles = 180° .

Total number of parts = $2 + 3 + 4 = 9$

First angle is $\frac{2}{9} \times 180 = 40^\circ$.

Second angle is $\frac{3}{9} \times 180 = 60^\circ$.

Third angle is $\frac{4}{9} \times 180 = 80^\circ$.

$$7. \text{ Percentage decrease} = \frac{\text{Amonut of change}}{\text{Original amount}} \times 100$$

$$\frac{500}{25000} \times 100 = 2\%.$$

$$8. \text{ a) } \frac{36}{-24} \div \frac{12}{12} = \frac{3}{-2} = \frac{-3}{2}$$

$$\text{b) } \frac{-3}{-15} \div \frac{3}{3} = \frac{1}{5}$$

$$9. \text{ a) } \frac{5}{4} + \frac{-11}{4} = \frac{-6}{4} \div \frac{2}{2} = \frac{-3}{2}$$

$$\text{b) } \frac{9}{2} \times \frac{-7}{4} = \frac{-63}{8}$$

10. Perimeter of a square is given by 320m

$$\text{Then side of the square} = \frac{320}{4} = 80\text{m}$$

Area of the square = side x side = 80 x 80 = 6400 square m

$$11. \left(\frac{3}{4}\right)^{17} \div \left(\frac{3}{4}\right)^4 = \left(\frac{3}{4}\right)^{17-4} = \left(\frac{3}{4}\right)^{13}$$

12. If $x = -2$,

$$2x^2 + 3x - 2 = 2 \times (-2)^2 + 3 \times -2 - 2 = 8 - 6 - 2 = 0$$

$$13. (6^2 \times 6^4) \div 6^3 = 6^{2+4} \div 6^3 = 6^{6-3} = 6^3.$$

14. Area of a parallelogram = base x height

Given base = 5 cm and height = 3 cm

So Area = 5 x 3 = 15 square cm

15. Let the whole quantity be x.

Then, 5% of x = 600

$$\frac{5}{100} \times x = 600$$

$$5x = 60000$$

$$X = 60000 \div 5 = 12000$$

$$16. 12m^2 - 4m^2 - 9m + 5m - 7m + 10 = 8m^2 - 11m + 10.$$

$$17. 5x - 10 - (-x^2 + 10x - 5) = 5x - 10 + x^2 - 10x + 5 = x^2 - 5x - 5.$$

18. $21.385 +$

10.250

$31.635 -$

11.530

20.105

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19. Cost Price = Rs 50

Profit = 12%.

$$12\% \text{ of } 50 = \frac{12}{100} \times 50 = \frac{600}{100} = 6$$

Selling Price = $50 + 6 = \text{Rs } 56$.

20. $7x^2y + x^2y - 4xy + 4xy + z = 8x^2y + z$.

21. a) $\frac{5}{3} + \frac{3}{5}$

LCM of 3 and 5 are 15.

So we can write $\frac{5}{3}$ as $\frac{25}{15}$.

$\frac{3}{5}$ is same as $\frac{9}{15}$.

So $\frac{25}{15} + \frac{9}{15} = \frac{34}{15}$.

b) $\frac{7}{24} - \frac{7}{36}$

LCM of 24 and 36 are 72.

So we can write $\frac{7}{24}$ as $\frac{21}{72}$.

$\frac{7}{36}$ is same as $\frac{14}{72}$.

Therefore, $\frac{21}{72} - \frac{14}{72} = \frac{7}{72}$.

$$c) \frac{3}{10} \times -9 = \frac{-27}{10}.$$

22. The price of a Laptop is 35000.

She sold it for Rs 30000.

So there is a loss of $35000 - 30000 = \text{Rs } 5000$.

$$\text{Loss percentage} = \frac{\text{LOSS}}{\text{cp}} \times 100 = \frac{5000}{35000} \times 100 = 14.286\%.$$

$$23. a) \begin{array}{r|l} 5 & 625 \\ \hline 5 & 125 \\ \hline 5 & 25 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

$$625 = 5 \times 5 \times 5 \times 5 = 5^4$$

$$b) \begin{array}{r|l} 7 & 343 \\ \hline 7 & 49 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

$$343 = 7 \times 7 \times 7 = 7^3$$

24. Given Principal P= Rs 2400

Rate R = 5%.

Interest I = 240

T = ?

$$\text{Simple Interest} = \frac{P \times R \times T}{100}$$

$$240 = \frac{2400 \times 5 \times T}{100}$$

$$240 = 120 T$$

$$T = \frac{240}{120} = 2 \text{ Years.}$$

25. a) When $n = -2$

$$5n - 2 = 5 \times -2 - 2 = -10 - 2 = -12$$

$$b) 5n^2 + 5n - 2 = 5(-2)^2 + 5 \times -2 - 2 = 20 - 10 - 2 = 20 - 12 = 8$$

$$c) n^3 + 5n^2 + 5n - 2 = (-2)^3 + 5(-2)^2 + 5(-2) - 2 = -8 + 20 - 10 - 2 = 0$$

$$26. \quad \frac{25 \times 5^2 \times t^8}{10^3 \times t^4} = \frac{5^2 \times 5^2 \times t^8}{(2 \times 5)^3 \times t^4} = \frac{5^4 \times t^{8-4}}{2^3 \times 5^3} = \frac{5^{4-3} \times t^4}{8} = \frac{5t^4}{8}$$

27. Length of park = 125 m

Breadth of park = 65 m

Area of park = $l \times b = 125 \times 65 = 8125$ square m.

Length of outer rectangle = $125 + 3 + 3 = 131$ m

Breadth of outer rectangle = $65 + 3 + 3 = 71$ m

Area of the park including the path = $131 \times 71 = 9301$ square m.

Area of path = Area of park including the path – Area of park = $9301 - 8125 = 1176$ square m.

28. Given radius of the circular pipe = 7 cm.

Length of a tape required to wrap once around the pipe = $2\pi r$ (Circumference of a circle).

$$= 2 \times \frac{22}{7} \times 7 = 2 \times 22 = 44 \text{ cm}$$

29. Given length = 24 cm.

Length of the diagonal = 25 cm

Since it is a rectangle, all the four angles are 90° .

So we can use Pythagoras theorem here.

By Pythagoras theorem, $Hypotenuse^2 = \text{Sum of the squares of its legs}$.

$$\text{Therefore, } 25^2 = 24^2 + leg^2$$

$$leg^2 = 25^2 - 24^2 = 625 - 576 = 49$$

$$\text{So breadth of the rectangle} = \sqrt{49} = 7 \text{ cm}$$

Therefore, Perimeter of the Rectangle = $2(l + b) = 2(24 + 7) = 2 \times 31 = 62$ cm.

30. Cost of a television = Rs 15500

It was sold with a loss of 8% means we need to find the 8% of 15500.

$$8\% \text{ of } 15500 = \frac{8}{100} \times 15500 = 8 \times 155 = 1240$$

$$\text{Selling Price} = 15500 - 1240 = \text{Rs } 14260.$$

$$31. \text{ Sum of } 3x - y + 11 \text{ and } -y - 11 \text{ is } 3x - y + 11 - y - 11 = 3x - 2y$$

$$\text{Now, } 3x - 2y - (3x - y - 11) = 3x - 2y - 3x + y + 11 = -y + 11$$

32. a) Price of shirt decreased from 280 to 210.

$$\text{Percentage decrease} = \frac{\text{Amount of change}}{\text{Original amount}} \times 100 = \frac{70}{280} \times 100 = \frac{7000}{280} = 25\%.$$

b) Marks in a test increased from 20 to 30.

$$\text{Percentage increase} = \frac{\text{Amount of change}}{\text{Original amount}} \times 100 = \frac{10}{20} \times 100 = \frac{1000}{20} = 50\%.$$

33. Given perimeter of the square = 44 cm

Therefore, if the same wire is re bent into a circle, its circumference is 44 cm.

$$\text{So } 2\pi r = 44$$

$$2 \times \frac{22}{7} \times r = 44$$

$$\frac{44r}{7} = 44$$

$$44r = 44 \times 7$$

$$r = \frac{44 \times 7}{44} = 7$$

$$\text{Area of the circle} = \pi r^2 = \frac{22}{7} \times 7 \times 7 = 22 \times 7 = 154 \text{ square cm.}$$

34. Do the construction yourself.

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