PM SHRI KENDRIYA VIDYALAYA GACHIBOWLI,GPRA CAMPUS,HYD–32
PRACTICE PAPER 04 (2023–24)
RATIONAL NUMBERS & PERIMETER AND AREA
(ANSWERS)

SUBJECT: MATHEMATICS	**MAX. MARKS : 40**
CLASS : VII	**DURATION : 1½ hr**

General Instructions:
(i). **All** questions are compulsory.
(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.
(iii). **Section A** comprises of **6 MCQs** of **1 mark** each. **Section B** comprises of **1 CCT question** of **4 marks** each which contains **4 MCQs**. **Section C** comprises of 3 questions of **2 marks** each. **Section D** comprises of 4 questions of **3 marks** each and **Section E** comprises of 3 questions of **4 marks** each.

SECTION – A
Questions 1 to 6 carry 1 mark each.

1. Find x such that $\dfrac{-3}{8}$ and $\dfrac{x}{-24}$ are equivalent rational numbers.
   (a) 3   (b) 9   (c) 8   (d) none of these
   Ans: (b) 9

2. Rewrite the rational number $\dfrac{24}{-72}$ in the simplest form.
   (a) $\dfrac{12}{-36}$ (b) $\dfrac{6}{-18}$ (c) $\dfrac{1}{-3}$ (d) none of these
   Ans: (c) $\dfrac{1}{-3}$

3. Find the area of a right triangle whose base is 3 cm, perpendicular is 2 cm and hypotenuse is 5 cm.
   (a) 3 cm^2 (b) 7.5 cm^2 (c) 5 cm^2 (d) 6 cm
   Ans: (a) 3 cm^2

4. If the area of the triangle is 36 cm^2 and the height is 3 cm, the base of the triangle will be
   (a) 12 cm   (b) 39 cm   (c) 108 cm   (d) 24 cm
   Ans: (d) 24 cm

5. What will be the area of circular button of radius 7 cm
   (a) 154 cm^2 (b) 49 cm^2 (c) 154 cm   (d) 3.14 x 7 cm^2
   Ans: (a) 154 cm^2

6. Find x such that $\dfrac{13}{6} = \dfrac{-65}{x}$
   (a) –30   (b) 30   (c) –6   (d) none of these
   Ans: (a) –30

SECTION – B(CCT Questions)
Questions 7 to 10 carry 1 mark each.

CCT Question
In Sudarshan Nagar colony, two cross roads, each of width 3 m, run at right angles through the centre of a rectangular park of length 90 m and breadth 60 m and parallel to its sides. Nikhil is a student of Class VII residing in Sudarshan Nagar colony. One day he has taken all the measurements and drawn a rough diagram of two cross roads as shown in below figure:
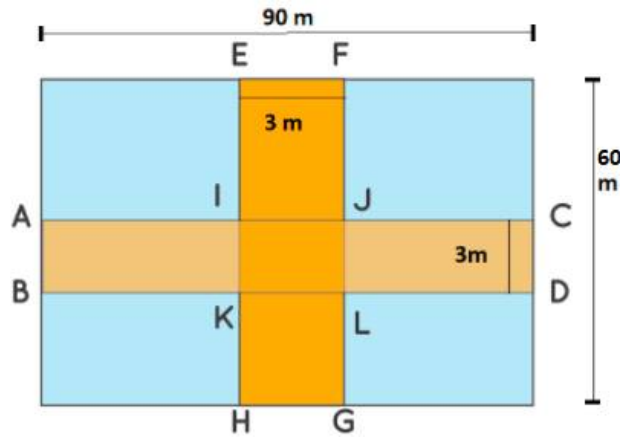
Answer the following questions based on the above information:

7. Find the Area of the rectangle ABCD
   (a) 270 m²   (b) 180 m²   (c) 9 m²   (d) 441 m²
   Ans: (a) 270 m²

8. Find the Area of the rectangle EFGH
   (a) 270 m²   (b) 180 m²   (c) 9 m²   (d) 441 m²
   Ans: (b) 180 m²

9. Find the Area of the Square KLMN
   (a) 270 m²   (b) 180 m²   (c) 9 m²   (d) 441 m²
   Ans: (c) 9 m²

10. Find the area of the road.
    (a) 270 m²   (b) 180 m²   (c) 9 m²   (d) 441 m²
    Ans: (d) 441 m²

SECTION – C
Questions 11 to 13 carry 2 marks each.

11. Find: $(i) \dfrac{2}{3} \times \dfrac{-7}{8}$ $(ii) \dfrac{-6}{7} \times \dfrac{5}{7}$

   Ans: $(i) \dfrac{2}{3} \times \dfrac{-7}{8} = \dfrac{1}{3} \times \dfrac{-7}{4} = \dfrac{-7}{12}$ $(ii) \dfrac{-6}{7} \times \dfrac{5}{7} = \dfrac{-30}{49}$

12. Sudhanshu divides a circular disc of radius 7 cm in two equal parts. What is the perimeter of each semicircular shape disc?

    Ans: Perimeter of semicircular shaped disc = πr + 2r

    $$= \left(\dfrac{22}{7} \times 7 \right) + (2 \times 7) = \left(\dfrac{22}{7} \times 7 \right) + (14) = 22 + 14 = 36 \text{ cm}$$

13. Find base BC, if the area of the triangle ABC is 36 cm² and the height AD is 3 cm.

    Ans: $\dfrac{1}{2} \times BC \times AD = Area$

    $$\Rightarrow 36 = \dfrac{1}{2} \times BC \times 6 \Rightarrow BC = 12 cm$$

SECTION – D
Questions 14 to 17 carry 3 marks each.

14. Write the following rational numbers ion ascending order:

    $(i) \dfrac{-3}{5}, \dfrac{-2}{5}, \dfrac{-1}{5}$ $(ii) \dfrac{-1}{3}, \dfrac{-2}{9}, \dfrac{-4}{3}$ $(iii) \dfrac{-3}{7}, \dfrac{-3}{2}, \dfrac{-3}{4}$

Ans: (i) The given rational numbers are in the form of like fractions,
Hence, (-3/5)< (-2/5) < (-1/5)
(ii) LCM of 3, 9, and 3 is 9
Now, (-1/3)= [(-1 × 3)/ (3 × 9)] = (-3/9)
(-2/9)= [(-2 × 1)/ (9 × 1)] = (-2/9)
(-4/3)= [(-4 × 3)/ (3 × 3)] = (-12/9)
Clearly, (-12/9) < (-3/9) < (-2/9)
Hence, (-4/3) < (-1/3) < (-2/9)
(iii) LCM of 7, 2, and 4 is 28
Now, (-3/7)= [(-3 × 4)/ (7 × 4)] = (-12/28)
(-3/2)= [(-3 × 14)/ (2 × 14)] = (-42/28)
(-3/4)= [(-3 × 7)/ (4 × 7)] = (-21/28)
Clearly, (-42/28) < (-21/28) < (-12/28)
Hence, (-3/2) < (-3/4) < (-3/7)

15. Find the sum: $(i) -2\dfrac{1}{3}+4\dfrac{3}{5}$ $(ii)\dfrac{-4}{5}\div(-3)$ $(iii)\dfrac{-6}{13}-\left(\dfrac{-7}{15}\right)$

Ans:

(i) $-2\dfrac{1}{3}+4\dfrac{3}{5} = -\left(2\dfrac{1}{3}\right)+4\dfrac{3}{5} = -\dfrac{7}{3}+\dfrac{23}{5} = \dfrac{-35+69}{15} = \dfrac{34}{15} = 2\dfrac{4}{15}$

(ii) $\dfrac{-4}{5}\div(-3) = \dfrac{-4}{5}\div\left(\dfrac{-3}{1}\right) = \dfrac{-4}{5}\times\dfrac{1}{-3}$

$= \dfrac{-4}{5}\times-\dfrac{1}{3} = \dfrac{-4\times(-1)}{5\times 3} = \dfrac{4}{15}$

(iii) $\dfrac{-6}{13}-\left(\dfrac{-7}{15}\right) = \dfrac{-6}{13}+\dfrac{7}{15} = \dfrac{-90+91}{195} = \dfrac{1}{195}$

16. Saima wants to put a lace on the edge of a circular table cover of diameter 1.5 m. Find the length of the lace required and also find its cost if one meter of the lace costs Rs 15. (Take π = 3.14)
Ans: Diameter of the circular table = 1.5 m
We know that radius (r) = d/2 = 1.5/2 = 0.75 m
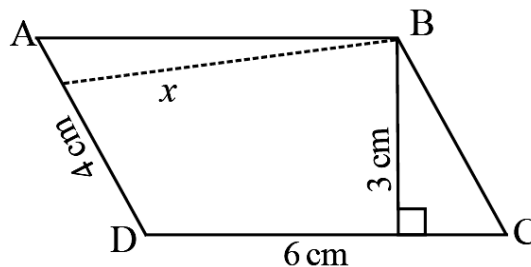Then, Circumference of the circle = 2πr
= 2 × 3.14 × 0.75 = 4.71 m
So, the length of the lace = 4.71 m
Cost of 1 m lace = ₹ 15 [given]
Cost of 4.71 m lace = ₹ 15 × 4.71 = ₹ 70.65

17. The two sides of the parallelogram ABCD are 6 cm and 4 cm. The height corresponding to the base CD is 3 cm. Find the (i) area of the parallelogram. (ii) the height corresponding to the base AD.
Ans: (i) Area of parallelogram = b × h = 6 cm × 3 cm = 18 cm2

(ii) base (b) = 4 cm, height = x,
Area = 18 cm^2
⇒ Area of parallelogram = b × x

$\Rightarrow 18 = 4 \times x$

$\Rightarrow 18/4 = x$

Therefore, x = 4.5 cm

Thus, the height corresponding to base AD is 4.5 cm.

SECTION – E
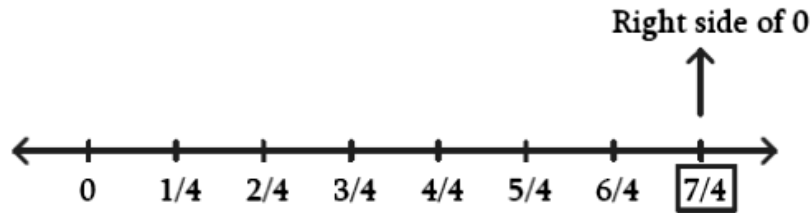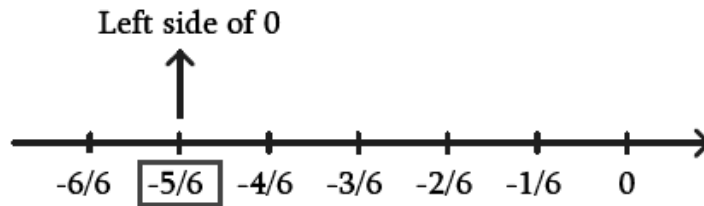
Questions 18 to 20 carry 4 marks each.

18. Represent these numbers on the number line. $(i)\dfrac{7}{4}$ $(ii)\dfrac{-5}{6}$ $(iii)\dfrac{4}{7}$ $(iv)\dfrac{9}{4}$

Ans:

(i)

Right side of 0

0   1/4   2/4   3/4   4/4   5/4   6/4   7/4
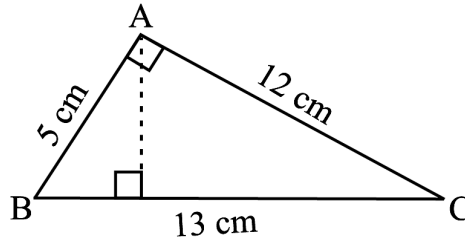
(ii)

Left side of 0

-6/6   -5/6   -4/6   -3/6   -2/6   -1/6   0

Similarly other two (iii) and (iv)

19. ΔABC is right angled at A (see below figure). AD is perpendicular to BC. If AB = 5 cm, BC = 13 cm and AC = 12 cm, Find the area of ΔABC. Also find the length of AD.

Ans: Given that. AB = 5 cm, BC = 13 cm, AC = 12 cm

Then, We know that, Area of the ΔABC = ½ × Base × Height

= ½ × AB × AC = ½ × 5 × 12 = 1 × 5 × 6 = 30 cm²

Now, Area of ΔABC = ½ × Base × Height

$\Rightarrow$ 30 = ½ × AD × BC $\Rightarrow$ 30 = ½ × AD × 13 $\Rightarrow$ (30 × 2)/13 = AD

$\Rightarrow$ AD = 60/13 $\Rightarrow$ AD = 4.6 cm

20. Shazli took a wire of length 44 cm and bent it into the shape of a circle. Find the radius of that circle. Also find its area. If the same wire is bent into the shape of a square, what will be the length of each of its sides? Which figure encloses more area, the circle or the square?

Ans: Length of wire that Shazli took =44 cm

Then, If the wire is bent into a circle,

We know that the circumference of the circle = 2πr

$\Rightarrow$ 44 = 2 × (22/7) × r $\Rightarrow$ 44 = 44/7 × r $\Rightarrow$ (44 × 7)/44 = r $\Rightarrow$ r = 7 cm

Area of the circle = πr² = 22/7 × 7² = 22/7 × 7 ×7 = 22 × 7 = 154 cm²

Now, If the wire is bent into a square,

The length of each side of the square = 44/4 = 11 cm
Area of the square = Length of the side of square^2 = 11^2
= 121 cm^2
By comparing the two areas of the square and circle,
Clearly, the circle encloses more area.