Mathematics.   **Grade: VII**

Block 22

1. Write the rule used to construct the following triangles.

   a.

   6 cm

   8 cm

   b.

   10

   25°

   6 cm
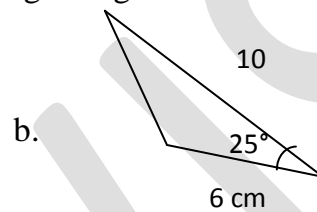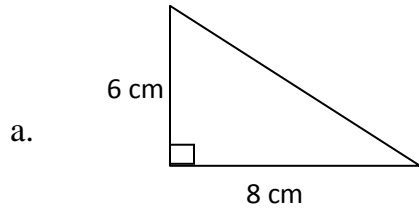
2. Construct the following triangles using compass.
   a. With sides 5.2 cm, 3.8 cm and 4.6 cm.
   b. With angles 72°, 48° and side included 4.7 cm.
   c. Right angled triangle with base 5 cm and hypotenuse 8cm.
   d. With angles 60°, 90° and side included 4.5 cm.

Block 23

3. Find the area of triangle with base 12cm and altitude 7 cm.
4. The area of a rectangle is 40 sq cm. Then the area of a triangle formed by the two adjacent sides and a diagonal of the same rectangle is --------------------
5. Formula for finding the area of a triangle is -----------------
6. The area of a parallelogram with base 8 cm and height 5cm is ------------------
7. The area of a parallelogram is 48 sq cm. If its height is 6cm, find the length of its base.
8. If the area of a right triangle is 68 sq cm and its base is 12 cm, find its altitude.
9. From one of the corners of a 10m by 8m rectangular metal sheet a 3.3m by 2.5m rectangle piece is cut off. Find the area and perimeter of the remaining sheet.
10. A wire is in the shape of a rectangle. Its length is 40 cm and breadth is 22 cm. If the same wire is rebent in the shape of a square, what will be the measure of each side? Also find which shape encloses more area?
11. Find the length BD in the adjoining figure.

   A

   D

   6 cm

   B   8 cm   C
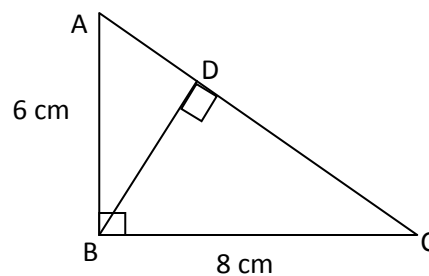
Block 24

12. The length of the radius of a circle is ----------- its diameter.
13. The ratio between the circumference and diameter of any circle is --------------
14. The approximate value of π in decimal form is ----------------
15. Find the circumference and area of a circle with diameter 70 cm.
16. How many times a road roller with radius 28 cm has to revolve to cover a distance of 176 m?
17. The circumference of a circle is 308 cm. Find its area.
18. The area of a circle is 154 sq cm. Find its circumference.
19. A circular park of radius 40m has a track of width 10m around its outside. Find the area of the track.
20. A rectangular playground of length 75 m and breadth 60 m has a track of width 5m around its inside. Find the area of the track.
21. Find the area of the circle given in the figure.
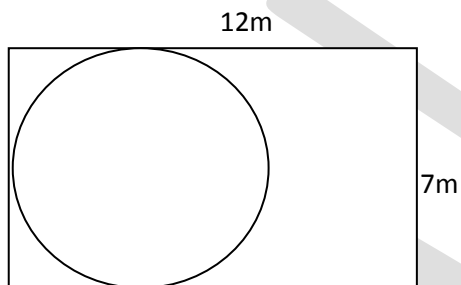
22. A gardener wants to fence a circular garden of diameter 21 m. Find the length of the rope he needs to purchase, if he makes two rounds of fence. Also find the cost of the rope, if it costs Rs 4 per metre (Take $\pi = \frac{22}{7}$) .

Block 26

23. Circle the like terms:

    a. $3x^2y$, $9x^2y^2$, $3x\,y^2$, $9x^2y$, $3x^3y^2$, $9x^2y^3$

24. Add the following:

    a. $6x^2 - x^2y - 8y$ and $2x^2 + 3x^2y - 2y$
    b. $3x^2 - 5x^2y^2 - 9y$ and $6x^2y^3 + 2x^3 + 8y$

c. $5x^2 + 3x$ and $72x^2 - 4x + 9$

25. Subtract

    a. $8xy^2 - 4x^2y^3 + 3x^2$ from $2x^2 - 3x^2y^3 - 8xy^2$

    b $(9y - x^2y^2 - 8xy) - (32x^3 - 8x^2y^2 + 3y)$

    c. $(3n^2 - 9m + 15nm) - (6mn + 5n^2 - 2m)$

26. In a school there are $2x^2 + 3x$ $3y$ *boys and* $2x^2 - 2y$ girls. What is the strength of the school?

27. From a rope of length $3x^2 + 2x - 4y$ a piece of length $2x^2 + 3x$ is removed. What is the length of the remaining part?

Block 28

28. Write 64 in exponential form with three different bases.

29. $(9^2 + 5^3 + 23)^0 =$ -------------

30. x^3 x $x^5 =$ **--------------**

31. Simplify:

    a. $(-3)^3 \times (-2)^4$
    b. $4^5 \times 4^3 \times 4^4$
    c. $(5^5)^5$
    d. $25 + 45^0 + 57^0$

32. Express in exponential form:

    a. $\dfrac{27}{125}$

    b. $\dfrac{10000}{16}$

33. Simplify:

    a. $((7^5)^2) \times 7^4 \div 7^8$

    b. $\dfrac{10^3 \times 5 \times 2^3}{5^3 \times 20^2}$

    c. $\dfrac{8^4 \times t^5 y^7}{8^2 \times t^7 y^3}$