



# ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION



CLASS 8

SUBJECT :Algebra and Geometry

Work sheet 6 answer key

Marks:15

AREAS OF RECTILINEAR FIGURES(Triangles)

Date:12.4.2020

**Answer all the following questions(1×15=15)**

## MULTIPLE-CHOICE QUESTIONS (MCQ)

*Choose the correct answer in each of the following.*

- In a  $\triangle ABC$ , it is given that base = 12 cm and height = 5 cm. Its area is  
(a)  $60 \text{ cm}^2$       (b)  $30 \text{ cm}^2$       (c)  $15\sqrt{3} \text{ cm}^2$       (d)  $45 \text{ cm}^2$
- The lengths of three sides of a triangle are 20 cm, 16 cm and 12 cm. The area of the triangle is  
(a)  $96 \text{ cm}^2$       (b)  $120 \text{ cm}^2$       (c)  $144 \text{ cm}^2$       (d)  $160 \text{ cm}^2$
- Each side of an equilateral triangle measures 8 cm. The area of the triangle is  
(a)  $8\sqrt{3} \text{ cm}^2$       (b)  $16\sqrt{3} \text{ cm}^2$       (c)  $32\sqrt{3} \text{ cm}^2$       (d)  $48 \text{ cm}^2$
- The base of an isosceles triangle is 8 cm long and each of its equal sides measures 6 cm. The area of the triangle is  
(a)  $16\sqrt{5} \text{ cm}^2$       (b)  $8\sqrt{5} \text{ cm}^2$       (c)  $16\sqrt{3} \text{ cm}^2$       (d)  $8\sqrt{3} \text{ cm}^2$
- The base of an isosceles triangle is 6 cm and each of its equal sides is 5 cm. The height of the triangle is  
(a) 8 cm      (b)  $\sqrt{30} \text{ cm}$       (c) 4 cm      (d)  $\sqrt{11} \text{ cm}$
- Each of the two equal sides of an isosceles right triangle is 10 cm long. Its area is  
(a)  $5\sqrt{10} \text{ cm}^2$       (b)  $50 \text{ cm}^2$       (c)  $10\sqrt{3} \text{ cm}^2$       (d)  $75 \text{ cm}^2$

7. Each side of an equilateral triangle is 10 cm long. The height of the triangle is  
 (a)  $10\sqrt{3}$  cm    (b)  $5\sqrt{3}$  cm    (c)  $10\sqrt{2}$  cm    (d) 5 cm
8. The height of an equilateral triangle is 6 cm. Its area is  
 (a)  $12\sqrt{3}$  cm<sup>2</sup>    (b)  $6\sqrt{3}$  cm<sup>2</sup>    (c)  $12\sqrt{2}$  cm<sup>2</sup>    (d) 18 cm<sup>2</sup>
9. The lengths of the three sides of a triangular field are 40 m, 24 m and 32 m respectively. The area of the triangle is  
 (a) 480 m<sup>2</sup>    (b) 320 m<sup>2</sup>    (c) 384 m<sup>2</sup>    (d) 360 m<sup>2</sup>
10. The sides of a triangle are in the ratio 5 : 12 : 13 and its perimeter is 150 cm. The area of the triangle is  
 (a) 375 cm<sup>2</sup>    (b) 750 cm<sup>2</sup>    (c) 250 cm<sup>2</sup>    (d) 500 cm<sup>2</sup>
11. The lengths of the three sides of a triangle are 30 cm, 24 cm and 18 cm respectively. The length of the altitude of the triangle corresponding to the smallest side is  
 (a) 24 cm    (b) 18 cm    (c) 30 cm    (d) 12 cm
12. The base of an isosceles triangle is 16 cm and its area is 48 cm<sup>2</sup>. The perimeter of the triangle is  
 (a) 41 cm    (b) 36 cm    (c) 48 cm    (d) 324 cm
13. The area of an equilateral triangle is  $36\sqrt{3}$  cm<sup>2</sup>. Its perimeter is  
 (a) 36 cm    (b)  $12\sqrt{3}$  cm    (c) 24 cm    (d) 30 cm
14. Each of the equal sides of an isosceles triangle is 13 cm and its base is 24 cm. The area of the triangle is  
 (a) 156 cm<sup>2</sup>    (b) 78 cm<sup>2</sup>    (c) 60 cm<sup>2</sup>    (d) 120 cm<sup>2</sup>
15. The base of a right triangle is 48 cm and its hypotenuse is 50 cm long. The area of the triangle is  
 (a) 168 cm<sup>2</sup>    (b) 252 cm<sup>2</sup>    (c) 336 cm<sup>2</sup>    (d) 504 cm<sup>2</sup>

ANSWERS (MCQ)

1. (b) 2. (a) 3. (b) 4. (b) 5. (c) 6. (b) 7. (b) 8. (a) 9. (c) 10. (b) 11. (a) 12. (b) 13. (a) 14. (c) 15. (c)

1.  $(\text{base} \times \text{height}) \div 2 = (12 \times 5) \div 2 = 30 \text{sq.cm}$

2. This is a right-angled triangle,  $12^2 + 16^2 = 20^2$ , so  $(16 \times 12) \div 2 = 96 \text{sq.cm}$

3.  $\sqrt{3}a^2/4 = (\sqrt{3} \times 8 \times 8) / 4 = 16\sqrt{3} \text{sq.cm}$

4. Using area of isosceles triangle formula,  $a=6$ ,  $b=8$ ,  $\text{Area} = (b/4) \times \sqrt{4a^2 - b^2}$

5. Height bisects base, so in right-angled triangle,  $h^2 + 3^2 = 5^2$ ,  $h=4 \text{cm}$

6.  $(10 \times 10) \div 2 = 50 \text{sq.cm}$

7. Height of equilateral triangle  $= (\sqrt{3}a)/2 = (\sqrt{3} \times 10) / 2 \text{ cm}$

8.  $(\sqrt{3}a)/2 = 6$ ,  $a = 12/\sqrt{3}$ ,  $\text{Area} = \sqrt{3}a^2/4 = 12\sqrt{3} \text{sq.cm}$

9. Right triangle,  $(24 \times 32) / 2$  sq.m

10.  $5x + 12x + 13x = 150$ ,  $x = 5$ , it's a right angle triangle, so  $12 \times 5 = 60 = b$ ,  $5 \times 5 = 25 = h$ ,  $(60 \times 25) \div 2 = 750$ sq.cm

11 it's a right angle triangle,  $324 + 576 = 900$ , so  $h = 24$ cm

12.  $(16 \times h) / 2 = 48$ ,  $h = 6$ ,  $a^2 = 6^2 + 8^2 = 100$ ,  $a = 10$ ,  $(10 + 10 + 16) = 36$ cm

13.  $\text{Area} = \sqrt{3}a^2/4 = 36\sqrt{3}$ ,  $a = 12$ ,  $\text{perimeter} = 3 \times 12 = 36$ cm

14. Height bisects base, so in right-angled triangle,  $h^2 + 12^2 = 13^2$ ,  $h = 5$ cm  $(24 \times 5) \div 2 = 60$ sq.cm

15.  $h^2 = 2500 - 2304 = 196$ ,  $h = 14$ cm,  $(48 \times 14) \div 2 = 336$ sq.cm

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