

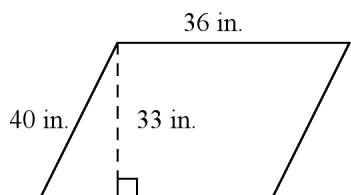
10.1-10.4 Study Guide

Multiple Choice

Identify the choice that best completes the statement or answers the question.

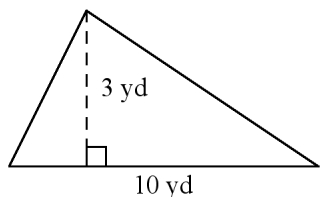
Find the area. The figure is not drawn to scale.

_____ 1.



- a. 1188 in.^2 b. 69 in.^2 c. 138 in.^2 d. 1440 in.^2

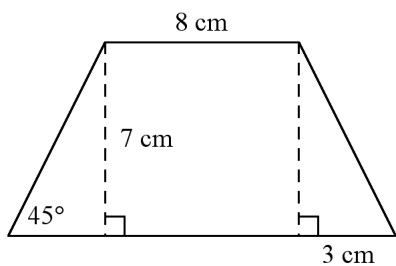
_____ 2.



- a. 30 yd^2 b. 6.5 yd^2 c. 13 yd^2 d. 15 yd^2

Find the area of the trapezoid. Leave your answer in simplest radical form.

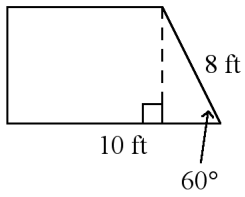
_____ 3.



Not drawn to scale

- a. 98 cm^2 b. 91 cm^2 c. 38.5 cm^2 d. 11 cm^2

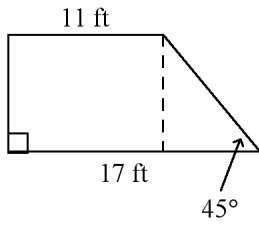
_____ 4.



Not drawn to scale

- a. $40\sqrt{3}$ ft² b. $16\sqrt{3}$ ft² c. $24\sqrt{3}$ ft² d. $32\sqrt{3}$ ft²

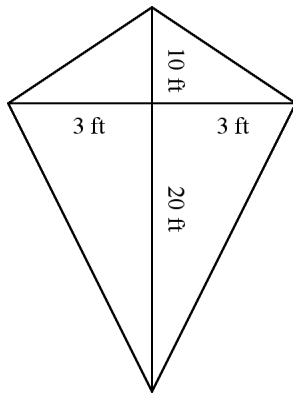
_____ 5.



Not drawn to scale

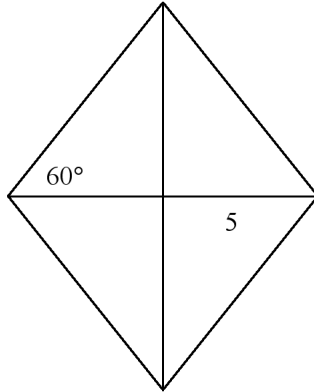
- a. $84\sqrt{2}$ ft² b. 84 ft² c. 168 ft² d. 14 ft²

_____ 6. What is the area of the kite?



- a. 180 ft² b. 90 ft² c. 72 ft² d. 18 ft²

- _____ 7. Find the area of the rhombus. Leave your answer in simplest radical form.



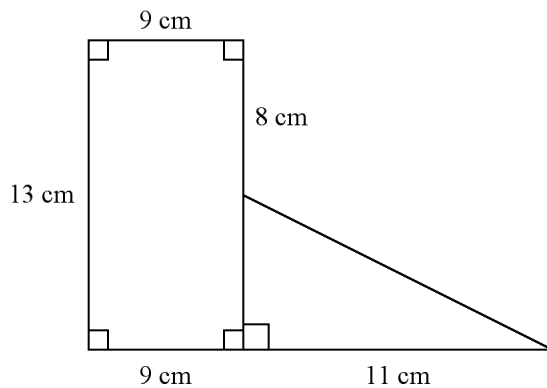
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- a. 50 b. $10\sqrt{3}$ c. $25\sqrt{6}$ d. $50\sqrt{3}$

Short Answer

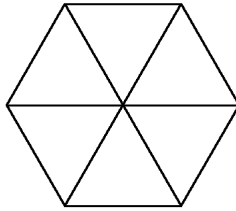
Find the area. The figure is not drawn to scale.

8.

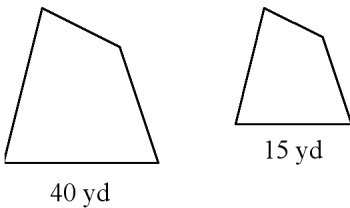


9. A parallelogram has sides measuring 19.5 m and 40.5 m. The height corresponding to the 19.5-m base is 8.1 m. Find the height, to the nearest tenth of a meter, corresponding to the 40.5-m base.
10. The area of a parallelogram is 420 cm^2 and the height is 35 cm. Find the corresponding base.
11. Find the area of a polygon with the vertices of $(-4, 5)$, $(-1, 5)$, $(4, -3)$, and $(-4, -3)$.
12. Find the area of a regular hexagon with an apothem 16.5 inches long and a side 19 inches long. Round your answer to the nearest tenth.

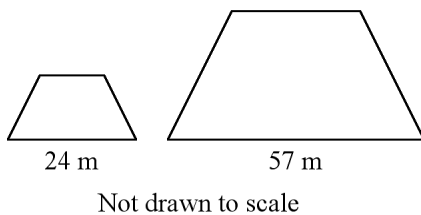
13. You are planning to use a ceramic tile design in your new bathroom. The tiles are blue-and-white equilateral triangles. You decide to arrange the blue tiles in a hexagonal shape as shown. If the side of each tile measures 7 centimeters, what will be the exact area of each hexagonal shape? Fill in each part.



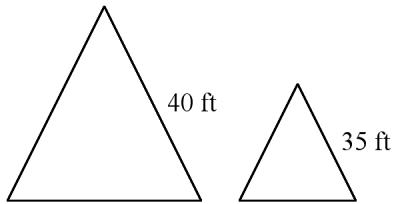
- a. apothem =
 b. side =
 c. perimeter =
 d. area =
14. A regular hexagon has a perimeter of 150 m. Find its area. Leave your answer in simplest radical form. Fill in each part.
- a. apothem =
 b. side =
 c. perimeter =
 d. area =
15. The figures are similar. Give the ratio of the perimeters and the ratio of the areas of the first figure to the second. The figures are not drawn to scale.



16. The widths of two similar rectangles are 16 cm and 14 cm. What is the ratio of the perimeters? Of the areas?
17. The trapezoids are similar. The area of the smaller trapezoid is 558 m^2 . Find the area of the larger trapezoid to the nearest whole number.



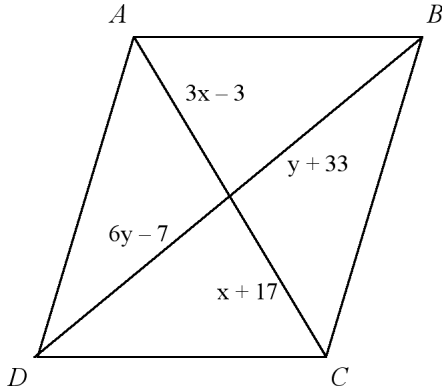
18. The triangles are similar. The area of the larger triangle is 1589 ft^2 . Find the area of the smaller triangle to the nearest whole number.



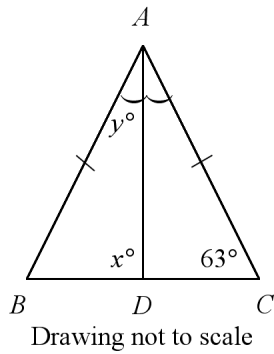
Not drawn to scale

19. Hiram raises earthworms. In a square of compost 4 ft by 4 ft, he can have 1000 earthworms. How many earthworms can he have if his square of compost has a side length that is 7 times longer?
20. Find the similarity ratio and the ratio of perimeters for two regular pentagons with areas of 49 cm^2 and 169 cm^2 .
21. Find the area of a regular square with radius 20 m. Leave answer to the nearest tenth.
- apothem =
 - side =
 - perimeter =
 - area =
22. A piece of art is in the shape of an equilateral triangle with sides of 21 in. Find the area of the piece of art. Round your answer to the nearest tenth.
23. To approach the runway, a pilot of a small plane must begin a 9° descent starting from a height of 1125 feet above the ground. To the nearest tenth of a mile, how many miles from the runway is the airplane at the start of this approach?
24. Find the angle of elevation of the sun from the ground to the top of a tree when a tree that is 10 yards tall casts a shadow 14 yards long. Round to the nearest degree.
25. The legs of an isosceles triangle have lengths $3x + 4$, $-x + 32$. The base has length $2x + 3$. What is the length of the base?

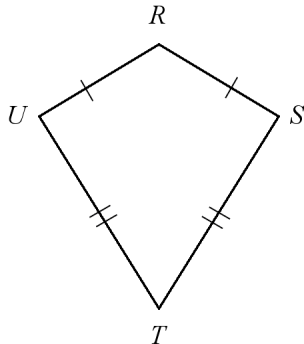
26. Find values of x and y for which $ABCD$ must be a parallelogram. The diagram is not to scale.



27. Find the values of x and y .



28. $m\angle R = 140$ and $m\angle S = 90$. Find $m\angle T$. The diagram is not to scale.



- 29.
- Find the area of a regular hexagon with sides 2 cm long. Leave your answer in simplest radical form.
 - Use your answer from part (a) to find the area of a regular hexagon of side length 8.

10.1-10.4 Study Guide Answer Section

MULTIPLE CHOICE

- | | |
|-----------|--|
| 1. ANS: A | OBJ: 10-1.1 Find the area of parallelograms and triangles |
| 2. ANS: D | OBJ: 10-1.1 Find the area of parallelograms and triangles |
| 3. ANS: B | OBJ: 10-2.1 Find the area of a trapezoid, rhombus, or kite |
| 4. ANS: D | OBJ: 10-2.1 Find the area of a trapezoid, rhombus, or kite |
| 5. ANS: B | OBJ: 10-2.1 Find the area of a trapezoid, rhombus, or kite |
| 6. ANS: B | OBJ: 10-2.1 Find the area of a trapezoid, rhombus, or kite |
| 7. ANS: D | OBJ: 10-2.1 Find the area of a trapezoid, rhombus, or kite |

SHORT ANSWER

8. ANS:
144.5 cm²
- OBJ: 10-1.1 Find the area of parallelograms and triangles
9. ANS:
3.9 m
- OBJ: 10-1.1 Find the area of parallelograms and triangles
10. ANS:
12 cm
- OBJ: 10-1.1 Find the area of parallelograms and triangles
11. ANS:
44 units²
- OBJ: 10-1.1 Find the area of parallelograms and triangles
12. ANS:
940.5 in.²
- OBJ: 10-3.1 Find the area of a regular polygon
13. ANS:
 $73.5\sqrt{3}$ cm²
- OBJ: 10-3.1 Find the area of a regular polygon
14. ANS:
 $\frac{1875}{2}\sqrt{3}$ m²
- OBJ: 10-3.1 Find the area of a regular polygon

15. ANS:

$$\frac{8}{3} \text{ and } \frac{64}{9}$$

OBJ: 10-4.1 Find the perimeters and areas of similar polygons

16. ANS:

8 : 7 and 64 : 49

OBJ: 10-4.1 Find the perimeters and areas of similar polygons

17. ANS:

$$3147 \text{ m}^2$$

OBJ: 10-4.1 Find the perimeters and areas of similar polygons

18. ANS:

$$1217 \text{ ft}^2$$

OBJ: 10-4.1 Find the perimeters and areas of similar polygons

19. ANS:

49,000

OBJ: 10-4.1 Find the perimeters and areas of similar polygons

20. ANS:

7 : 13; 7 : 13

OBJ: 10-4.1 Find the perimeters and areas of similar polygons

21. ANS:

$$800 \text{ m}^2$$

OBJ: 10-5.1 Finding the Area of a Regular Polygon

22. ANS:

191 in.²

OBJ: 8-2.2 Using 30°-60°-90° Triangles

23. ANS:

1.4 mi

OBJ: 8-4.1 Use angles of elevation and depression to solve problems

24. ANS:

36°

OBJ: 8-5.1 Using Angles of Elevation and Depression

25. ANS:

17

OBJ: 4-5.1 The Isosceles Triangle Theorems

26. ANS:
 $x = 10, y = 8$

OBJ: 6-3.1 Is the Quadrilateral a Parallelogram?

27. ANS:
 $x = 90, y = 27$

OBJ: 4-5.1 The Isosceles Triangle Theorems

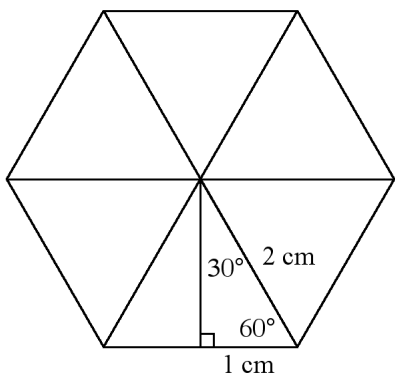
28. ANS:
 40

OBJ: 6-5.1 Properties of Trapezoids and Kites

ESSAY

29. ANS:
 [4] Answers may vary. Sample:

- a.** The central angle of one of the triangles in the hexagon is $\frac{360}{6} = 60^\circ$. The altitude of the triangle is $\sqrt{3}$ because it is a 30° - 60° - 90° right triangle.



The area of the hexagon is therefore $6 \times \frac{1}{2} (2) (\sqrt{3})$ or $6\sqrt{3} \text{ cm}^2$.

- b.** Because regular hexagons are similar, their areas will be proportional to the square of their similarity ratio: $\left(\frac{1}{4}\right)^2 = \frac{1}{16} = \frac{6\sqrt{3}}{x}$. $x = 96\sqrt{3} \text{ cm}^2$.

- [3] correct methods but with a minor computational error
 [2] error in method
 [1] correct answer but with no work shown

OBJ: 10-4.1 Find the perimeters and areas of similar polygons