

Directions: Write answers in the spaces provided.

Simplify.

1.  $\sqrt{28}$

2.  $3\sqrt{45}$

3.  $\frac{12}{\sqrt{3}}$

Find the geometric mean between the given numbers in simplest form.

4. 4 and 10

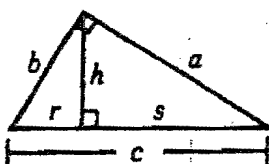
5. 9 and 16

Refer to the diagram to find each value in simplest form.

6. If  $r = 3$  and  $s = 6$ , find  $h$ .

7. If  $b = 6$  and  $c = 18$ , find  $r$ .

8. If  $r = 3$  and  $c = 12$ , find  $a$ .



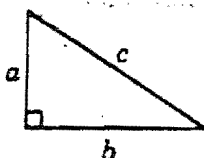
Questions 6-8

Use the right triangle shown to find each value in simplest form.

9. If  $a = 4$  and  $b = 5$ , find  $c$ .

10. If  $a = 16$  and  $c = 20$ , find  $b$ .

11. If  $a = \sqrt{5}$  and  $b = 2\sqrt{5}$ , find  $c$ .



Questions 9-11

State whether the triangle with sides of the given lengths is acute, right, or obtuse.

12. 3, 5, 6

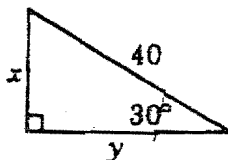
13. 1, 2,  $\sqrt{5}$

14. 10, 10, 14

Find each value in simplest form.

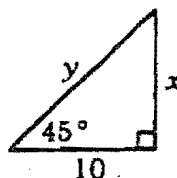
15. a. Find  $x$ .

b. Find  $y$ .

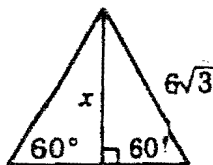


16. a. Find  $x$ .

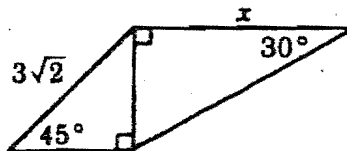
b. Find  $y$ .



17. Find  $x$ .



18. Find  $x$ .



## Answers

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

11. \_\_\_\_\_

12. \_\_\_\_\_

13. \_\_\_\_\_

14. \_\_\_\_\_

15. a. \_\_\_\_\_

b. \_\_\_\_\_

16. a. \_\_\_\_\_

b. \_\_\_\_\_

17. \_\_\_\_\_

18. \_\_\_\_\_

19. The diagonals of a rhombus have lengths 4 and 12. Find the length of a side in simplest form.

20. The vertex angle of an isosceles triangle is  $120^\circ$ . The base length is 18. Find the length of the altitude to the base in simplest form.

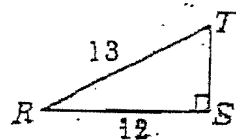
Questions 21-24, refer to the diagram at the right.

21.  $\sin R = \frac{?}{?}$

22.  $\sin T = \frac{?}{?}$

23.  $\cos R = \frac{?}{?}$

24.  $\tan T = \frac{?}{?}$



Questions 21-24

Questions 25-27, write the letter of the equation that could be used to solve for  $x$ .

(A)  $\sin 40^\circ = \frac{x}{75}$

(B)  $\tan 50^\circ = \frac{x}{75}$

(C)  $\cos 40^\circ = \frac{x}{75}$

(D)  $\cos 40^\circ = \frac{75}{x}$

(A)  $\tan 39^\circ = \frac{x}{14}$

(B)  $\cos 51^\circ = \frac{x}{14}$

(C)  $\sin 51^\circ = \frac{14}{x}$

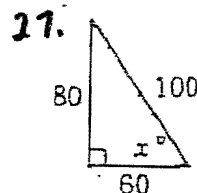
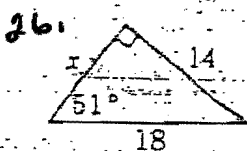
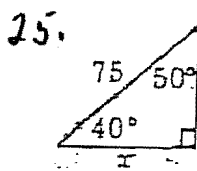
(D)  $\tan 90^\circ = \frac{18}{x}$

(A)  $\tan x^\circ = \frac{80}{100}$

(B)  $\sin x^\circ = \frac{80}{100}$

(C)  $\cos x^\circ = \frac{80}{100}$

(D)  $\sin x^\circ = \frac{100}{80}$

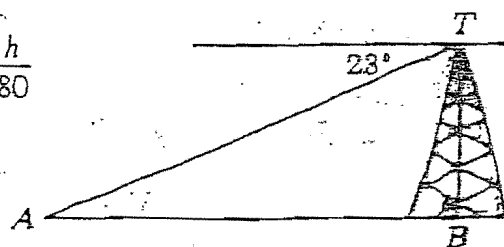


28. The angle of depression from the top of the tower to point A is  $23^\circ$ . The distance from A to the base B of the tower is 80 m. To find the height,  $h$ , of the tower, use:

(A)  $\sin 23^\circ = \frac{h}{80}$

(B)  $\cos 23^\circ = \frac{80}{h}$

(C)  $\tan 23^\circ = \frac{h}{80}$



Question 28

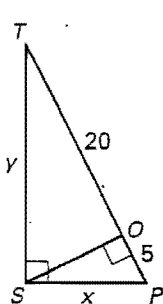
## Answers

19. \_\_\_\_\_
20. \_\_\_\_\_
21. \_\_\_\_\_
22. \_\_\_\_\_
23. \_\_\_\_\_
24. \_\_\_\_\_
25. \_\_\_\_\_
26. \_\_\_\_\_
27. \_\_\_\_\_
28. \_\_\_\_\_

**SAT/ACT Chapter Test**

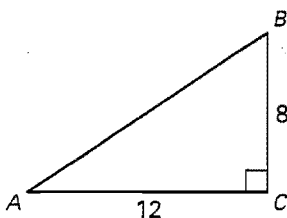
For use after Chapter 9

1. Use the diagram to find the values of
- $x$
- and
- $y$
- .



- (A)  $x = 5\sqrt{5}, y = 10\sqrt{5}$   
 (B)  $x = 5\sqrt{5}, y = 20\sqrt{5}$   
 (C)  $x = 5\sqrt{25}, y = 10\sqrt{5}$   
 (D)  $x = 5\sqrt{25}, y = 20\sqrt{5}$   
 (E)  $x = 5\sqrt{15}, y = 20\sqrt{5}$

2. In the diagram below, what is the measure of
- $\angle A$
- to the nearest tenth of a degree?



- (A)  $41.8^\circ$   
 (B)  $48.2^\circ$   
 (C)  $33.7^\circ$   
 (D)  $1^\circ$   
 (E)  $42^\circ$

3. Which set of numbers can represent the side lengths of an obtuse triangle?

- (A) 12, 16, 20      (B) 8, 14, 17  
 (C) 1, 2, 1          (D) 3, 4, 5  
 (E) 3.5, 3.5, 3.5

4. Points
- $A(5, 2)$
- and
- $B(8, 7)$
- are the initial and the terminal points of
- $\overrightarrow{AB}$
- . Find the magnitude of
- $\overrightarrow{AB}$
- .

- (A)  $\langle 3, 5 \rangle$       (B)  $\langle 3, 1 \rangle$       (C)  $2\sqrt{6}$   
 (D)  $\langle 5, 3 \rangle$       (E)  $\sqrt{34}$

5. Let
- $\vec{v} = \langle -3, y \rangle$
- and
- $\vec{w} = \langle x, 8 \rangle$
- . If
- $\vec{v} + \vec{w} = \langle 1, 3 \rangle$
- , what are the values of
- $x$
- and
- $y$
- ?

- (A)  $x = -4, y = 11$       (B)  $x = 4, y = 11$       (C)  $x = -4, y = -5$   
 (D)  $x = 4, y = -5$       (E)  $x = -4, y = 5$

6. Let the numbers represent the lengths of the sides of a triangle. Which of the triangles is a right triangle?

- (A) 5, 8, 13      (B) 27, 36, 45  
 (C) 1, 2, 3      (D) 7.5, 8.5, 10.5  
 (E) 18, 24, 31

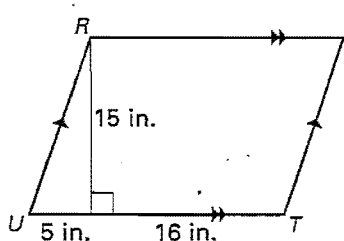
7. The length of a diagonal of a square is 20 inches. What is its perimeter?

- (A)  $40\sqrt{2}$  in.      (B)  $20\sqrt{2}$  in.  
 (C)  $30\sqrt{2}$  in.      (D) 20 in.  
 (E)  $10\sqrt{2}$  in.

8. The base of an isosceles triangle is 21 centimeters long. The altitude to the base is 9 centimeters long. What is the approximate measure of a base angle of the triangle?

- (A)  $60^\circ$       (B)  $49.4^\circ$   
 (C)  $40.6^\circ$       (D)  $31^\circ$   
 (E)  $42^\circ$

9. Find the area of
- $\square RSTU$
- .



- (A) 253 in.<sup>2</sup>  
 (B) 332 in.<sup>2</sup>  
 (C) 277.5 in.<sup>2</sup>  
 (D) 240 in.<sup>2</sup>  
 (E) 315 in.<sup>2</sup>

10. Using the figure in Exercise 9, find the perimeter of
- $\square RSTU$
- .

- (A) 72.5 in.      (B) 73.6 in.  
 (C) 72 in.      (D) 73 in.  
 (E) 71.8 in.

# SAT/ACT Test

1. A 2. C 3. B 4. E 5. D 6. B 7. A  
8. C 9. E 10. B

## Answers

1.  $2\sqrt{7}$
2.  $9\sqrt{5}$
3.  $4\sqrt{3}$
4.  $2\sqrt{10}$
5.  $12$
6.  $3\sqrt{2}$
7.  $2$
8.  $6\sqrt{3}$
9.  $\sqrt{41}$
10.  $12$
11.  $5$
12. obtuse
13. right
14. acute
15. a.  $20$   
b.  $20\sqrt{3} = 34.64$
16. a.  $10$   
b.  $10\sqrt{2} = 14.14$
17.  $9$
18.  $3\sqrt{3} = 5.20$

## Answers

19.  $2\sqrt{10}$
20.  $3\sqrt{3}$
21.  $5/13$
22.  $12/13$
23.  $12/13$
24.  $12/5$
25. C
26. A
27. B
28.  $6 \text{ mi/hr}$