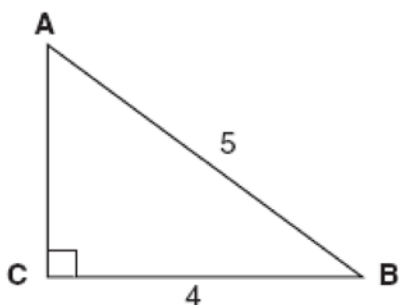


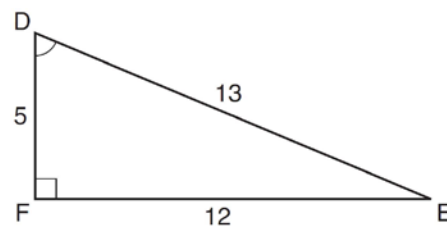
**A.A.43: Using Trigonometry to Find an Angle 1: Determine the measure of an angle of a right triangle, given the length of any two sides of the triangle**

- 1 Which equation could be used to find the measure of one acute angle in the right triangle shown below?



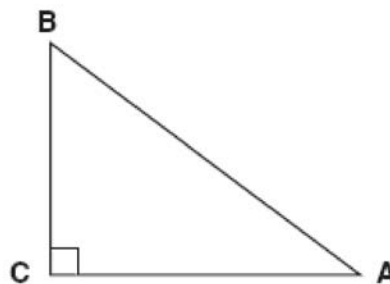
- 1)  $\sin A = \frac{4}{5}$
- 2)  $\tan A = \frac{5}{4}$
- 3)  $\cos B = \frac{5}{4}$
- 4)  $\tan B = \frac{4}{5}$

- 2 Which equation could be used to find the measure of angle D in the right triangle shown in the diagram below?



- 1)  $\cos D = \frac{12}{13}$
- 2)  $\cos D = \frac{13}{12}$
- 3)  $\sin D = \frac{5}{13}$
- 4)  $\sin D = \frac{12}{13}$

- 3 In the diagram of  $\triangle ABC$  shown below,  $BC = 10$  and  $AB = 16$ .



To the *nearest tenth of a degree*, what is the measure of the largest acute angle in the triangle?

- 1) 32.0
- 2) 38.7
- 3) 51.3
- 4) 90.0

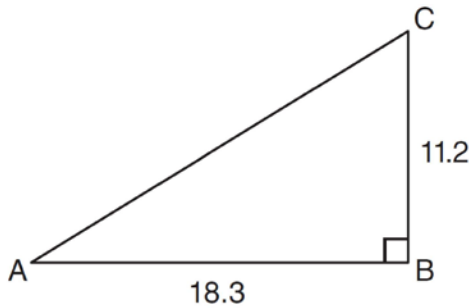
Regents Exam Questions

A.A.43: Using Trigonometry to Find an Angle 1

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Name: \_\_\_\_\_

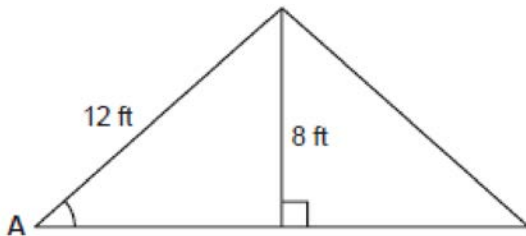
- 4 In right triangle  $ABC$  shown below,  $AB = 18.3$  and  $BC = 11.2$ .



What is the measure of  $\angle A$ , to the *nearest tenth of a degree*?

- 1) 31.5
- 2) 37.7
- 3) 52.3
- 4) 58.5

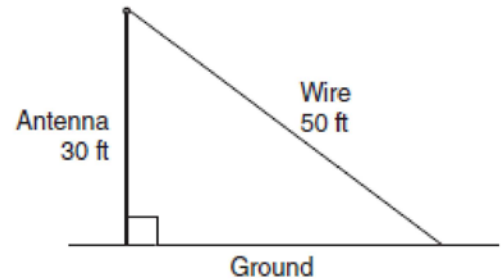
- 5 The center pole of a tent is 8 feet long, and a side of the tent is 12 feet long as shown in the diagram below.



If a right angle is formed where the center pole meets the ground, what is the measure of angle  $A$  to the *nearest degree*?

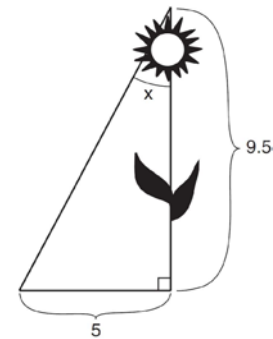
- 1) 34
- 2) 42
- 3) 48
- 4) 56

- 6 A communications company is building a 30-foot antenna to carry cell phone transmissions. As shown in the diagram below, a 50-foot wire from the top of the antenna to the ground is used to stabilize the antenna.



Find, to the *nearest degree*, the measure of the angle that the wire makes with the ground.

- 7 The diagram below shows the path a bird flies from the top of a 9.5-foot-tall sunflower to a point on the ground 5 feet from the base of the sunflower.



To the *nearest tenth of a degree*, what is the measure of angle  $x$ ?

- 1) 27.8
- 2) 31.8
- 3) 58.2
- 4) 62.2

- 8 In right triangle  $EFD$ ,  $ED = 11$ ,  $EF = 6$ , and  $m\angle F = 90$ . What is the measure of angle  $E$ , to the nearest degree?

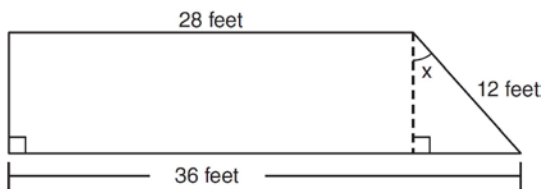
1) 61  
2) 57  
3) 33  
4) 29

- 9 In right triangle  $ABC$ ,  $AB = 20$ ,  $AC = 12$ ,  $BC = 16$ , and  $m\angle C = 90$ . Find, to the nearest degree, the measure of  $\angle A$ .

- 10 A 28-foot ladder is leaning against a house. The bottom of the ladder is 6 feet from the base of the house. Find the measure of the angle formed by the ladder and the ground, to the nearest degree.

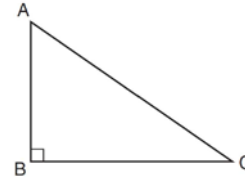
- 11 A man standing on level ground is 1000 feet away from the base of a 350-foot-tall building. Find, to the nearest degree, the measure of the angle of elevation to the top of the building from the point on the ground where the man is standing.

- 12 A trapezoid is shown below.



Calculate the measure of angle  $x$ , to the nearest tenth of a degree.

- 13 In right triangle  $ABC$  shown below,  $AC = 29$  inches,  $AB = 17$  inches, and  $m\angle ABC = 90$ . Find the number of degrees in the measure of angle  $BAC$ , to the nearest degree.



Find the length of  $BC$  to the nearest inch.

**A.A.43: Using Trigonometry to Find an Angle 1: Determine the measure of an angle of a right triangle, given the length of any two sides of the triangle**

**Answer Section**

1 ANS: 1 REF: 080824ia

2 ANS: 4

$$\sin D = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{12}{13}$$

REF: 061325ia

3 ANS: 3

$$\sin A = \frac{10}{16} \quad B = 180 - (90 + 38.7) = 51.3. \quad \text{A } 90^\circ \text{ angle is not acute.}$$

$$A \approx 38.7$$

REF: 080829ia

4 ANS: 1 REF: 061114ia

5 ANS: 2

$$\sin A = \frac{8}{12}$$

$$A \approx 42$$

REF: 060816ia

6 ANS:

$$\sin x = \frac{30}{50}$$

$$x = \sin^{-1} \frac{3}{5}$$

$$x \approx 37$$

REF: 061033ia

7 ANS: 1

$$\tan x = \frac{5}{9.5}$$

$$x \approx 27.8$$

REF: 011525ia

8 ANS: 2

$$\cos E = \frac{6}{11}$$

$$E \approx 57$$

REF: 061523ia

9 ANS:

$$53. \sin A = \frac{16}{20}$$

$$A \approx 53$$

REF: 011032ia

10 ANS:

$$78. \cos x = \frac{6}{28}$$

$$x \approx 78$$

REF: 061235ia

11 ANS:

$$\tan x = \frac{350}{1000}$$

$$x \approx 19$$

REF: 061335ia

12 ANS:

$$41.8. \sin x = \frac{8}{12}$$

$$A \approx 41.8$$

REF: 081135ia

13 ANS:

$$54, 23. \cos A = \frac{17}{29}. \sqrt{29^2 - 17^2} \approx 23$$

$$x \approx 54$$

REF: 081238ia