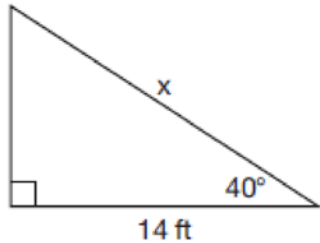


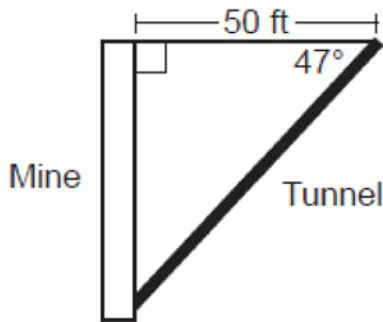
**G.SRT.C.8: Using Trigonometry to Find a Side 1**

- 1 Given the right triangle in the diagram below, what is the value of  $x$ , to the *nearest foot*?



- 1) 11
- 2) 17
- 3) 18
- 4) 22

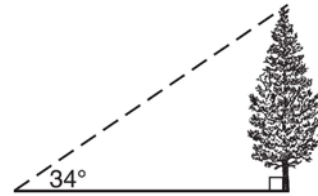
- 2 A vertical mine shaft is modeled in the diagram below. At a point on the ground 50 feet from the top of the mine, a ventilation tunnel is dug at an angle of  $47^\circ$ .



What is the length of the tunnel, to the *nearest foot*?

- 1) 47
- 2) 54
- 3) 68
- 4) 73

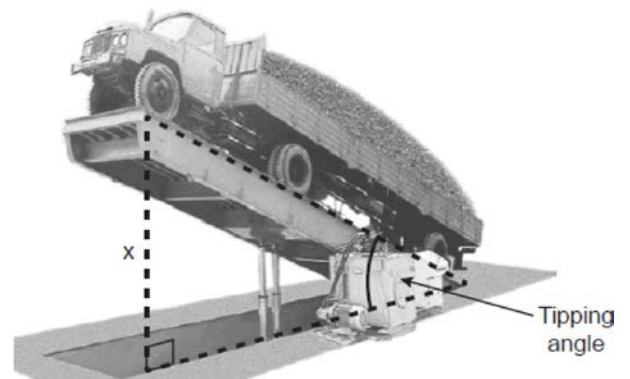
- 3 As shown in the diagram below, the angle of elevation from a point on the ground to the top of the tree is  $34^\circ$ .



If the point is 20 feet from the base of the tree, what is the height of the tree, to the *nearest tenth of a foot*?

- 1) 29.7
- 2) 16.6
- 3) 13.5
- 4) 11.2

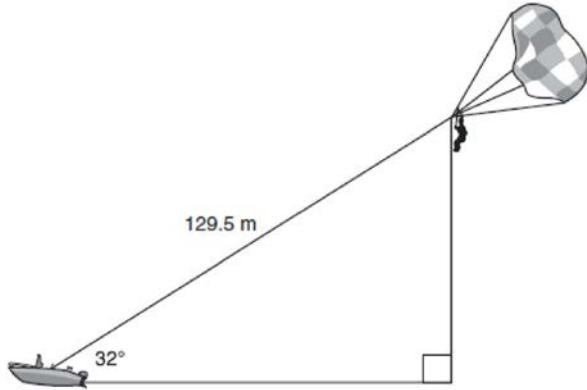
- 4 A tipping platform is a ramp used to unload trucks, as shown in the diagram below.



The truck is on a 75-foot-long ramp. The ramp is tipped at an angle of  $30^\circ$ . What is the height of the upper end of the ramp,  $x$ , to the *nearest tenth of a foot*?

- 1) 68.7
- 2) 65.0
- 3) 43.3
- 4) 37.5

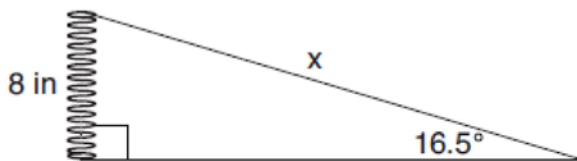
- 5 A man was parasailing above a lake at an angle of elevation of  $32^\circ$  from a boat, as modeled in the diagram below.



If 129.5 meters of cable connected the boat to the parasail, approximately how many meters above the lake was the man?

- 1) 68.6
- 2) 80.9
- 3) 109.8
- 4) 244.4

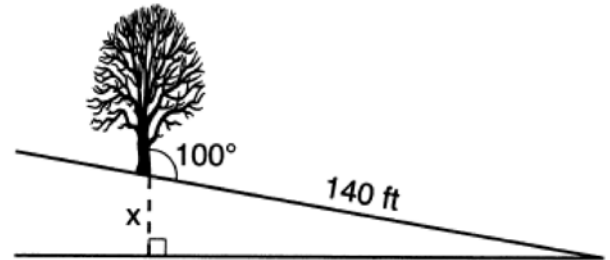
- 6 Yolanda is making a springboard to use for gymnastics. She has 8-inch-tall springs and wants to form a  $16.5^\circ$  angle with the base, as modeled in the diagram below.



To the *nearest tenth of an inch*, what will be the length of the springboard,  $x$ ?

- 1) 2.3
- 2) 8.3
- 3) 27.0
- 4) 28.2

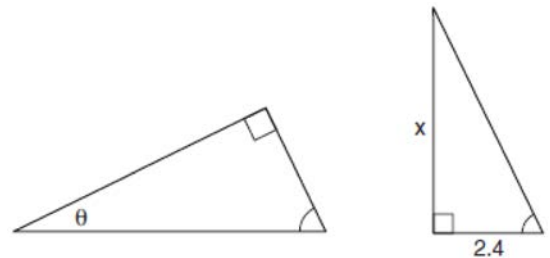
- 7 The diagram below shows a tree growing vertically on a hillside. The angle formed by the tree trunk and the hillside is  $100^\circ$ . The distance from the base of the tree to the bottom of the hill is 140 feet.



What is the vertical drop,  $x$ , to the base of the hill, to the *nearest foot*?

- 1) 24
- 2) 25
- 3) 70
- 4) 138

- 8 The diagram below shows two similar triangles.



If  $\tan \theta = \frac{3}{7}$ , what is the value of  $x$ , to the *nearest tenth*?

- 1) 1.2
- 2) 5.6
- 3) 7.6
- 4) 8.8

- 9 In right triangle  $ABC$ ,  $m\angle A = 90^\circ$ ,  $m\angle B = 18^\circ$ , and  $AC = 8$ . To the *nearest tenth*, the length of  $\overline{BC}$  is
- 2.5
  - 8.4
  - 24.6
  - 25.9
- 10 In right triangle  $ABC$ ,  $m\angle A = 32^\circ$ ,  $m\angle B = 90^\circ$ , and  $AC = 6.2$  cm. What is the length of  $\overline{BC}$ , to the *nearest tenth of a centimeter*?
- 3.3
  - 3.9
  - 5.3
  - 11.7
- 11 A 20-foot support post leans against a wall, making a  $70^\circ$  angle with the ground. To the *nearest tenth of a foot*, how far up the wall will the support post reach?
- 6.8
  - 6.9
  - 18.7
  - 18.8
- 12 A ladder 20 feet long leans against a building, forming an angle of  $71^\circ$  with the level ground. To the *nearest foot*, how high up the wall of the building does the ladder touch the building?
- 15
  - 16
  - 18
  - 19
- 13 A 15-foot ladder leans against a wall and makes an angle of  $65^\circ$  with the ground. What is the horizontal distance from the wall to the base of the ladder, to the *nearest tenth of a foot*?
- 6.3
  - 7.0
  - 12.9
  - 13.6
- 14 Chelsea is sitting 8 feet from the foot of a tree. From where she is sitting, the angle of elevation of her line of sight to the top of the tree is  $36^\circ$ . If her line of sight starts 1.5 feet above ground, how tall is the tree, to the *nearest foot*?
- 8
  - 7
  - 6
  - 4
- 15 From a point on the ground one-half mile from the base of a historic monument, the angle of elevation to its top is  $11.87^\circ$ . To the *nearest foot*, what is the height of the monument?
- 543
  - 555
  - 1086
  - 1110
- 16 In rectangle  $ABCD$ , diagonal  $\overline{AC}$  is drawn. The measure of  $\angle ACD$  is  $37^\circ$  and the length of  $\overline{BC}$  is 7.6 cm. What is the length of  $\overline{AC}$ , to the *nearest tenth of a centimeter*?
- 4.6
  - 9.5
  - 10.1
  - 12.6

**G.SRT.C.8: Using Trigonometry to Find a Side 1  
Answer Section**

1 ANS: 3

$$\cos 40 = \frac{14}{x}$$

$$x \approx 18$$

REF: 011712geo

2 ANS: 4

$$\cos 47 = \frac{50}{x}$$

$$x \approx 73$$

REF: 012406geo

3 ANS: 3

$$\tan 34 = \frac{T}{20}$$

$$T \approx 13.5$$

REF: 061505geo

4 ANS: 4

$$\sin 30 = \frac{x}{75}$$

$$x = 37.5$$

REF: 012411geo

5 ANS: 1

$$\sin 32 = \frac{O}{129.5}$$

$$O \approx 68.6$$

REF: 011804geo

6 ANS: 4

$$\sin 16.5 = \frac{8}{x}$$

$$x \approx 28.2$$

REF: 081806ai

7 ANS: 1

$$\sin 10 = \frac{x}{140}$$

$$x \approx 24$$

REF: 062217geo

8 ANS: 2

$$\tan \theta = \frac{2.4}{x}$$

$$\frac{3}{7} = \frac{2.4}{x}$$

$$x = 5.6$$

REF: 011707geo

9 ANS: 4

$$\sin 18 = \frac{8}{x}$$

$$x \approx 25.9$$

REF: 062316geo

10 ANS: 1

$$\sin 32 = \frac{x}{6.2}$$

$$x \approx 3.3$$

REF: 081719geo

11 ANS: 4

$$\sin 70 = \frac{x}{20}$$

$$x \approx 18.8$$

REF: 061611geo

12 ANS: 4

$$\sin 71 = \frac{x}{20}$$

$$x = 20 \sin 71 \approx 19$$

REF: 061721geo

13 ANS: 1

$$\cos 65 = \frac{x}{15}$$

$$x \approx 6.3$$

REF: 081924geo

14 ANS: 2

$$\tan 36 = \frac{x}{8} \quad 5.8 + 1.5 \approx 7$$

$$x \approx 5.8$$

REF: 081915geo

15 ANS: 2

$$\tan 11.87 = \frac{x}{0.5(5280)}$$

$$x \approx 555$$

REF: 011913geo

16 ANS: 4

$$\sin 37 = \frac{7.6}{x}$$

$$x \approx 12.6$$

REF: 062412geo