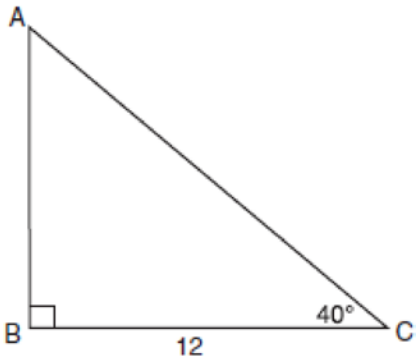
Name: _____

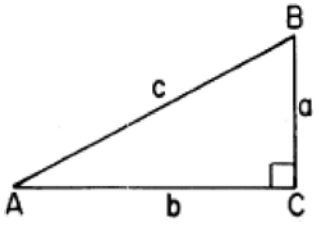
G.SRT.C.8: Using Trigonometry to Find a Side 1b

1 In the accompanying diagram of right triangle ABC, $BC = 12$ and $m\angle C = 40$.



Which single function could be used to find AB?
1) $\tan 50$
2) $\sin 50$
3) $\cos 40$
4) $\sin 40$

2 In right triangle ABC, $m\angle C = 90$. Which equation is true for this triangle?



1) $a = b\sin A$
2) $a = c\tan A$
3) $a = c\cos A$
4) $a = c\sin A$

3 The angle of elevation from a point 25 feet from the base of a tree on level ground to the top of the tree is 30°. Which equation can be used to find the height of the tree?

1) $\tan 30° = \frac{x}{25}$
2) $\sin 30° = \frac{x}{25}$
3) $\cos 30° = \frac{x}{25}$
4) $30^2 + 25^2 = x^2$

4 By law, a wheelchair service ramp may be inclined no more than 4.76°. If the base of a ramp begins 15 feet from the base of a public building, which equation could be used to determine the maximum height, h, of the ramp where it reaches the building's entrance?

1) $\sin 4.76° = \frac{h}{15}$
2) $\sin 4.76° = \frac{15}{h}$
3) $\tan 4.76° = \frac{h}{15}$
4) $\tan 4.76° = \frac{15}{h}$

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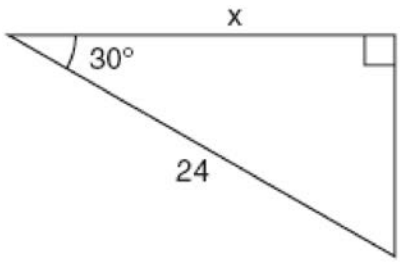
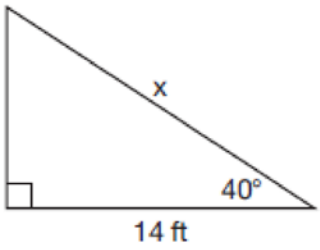
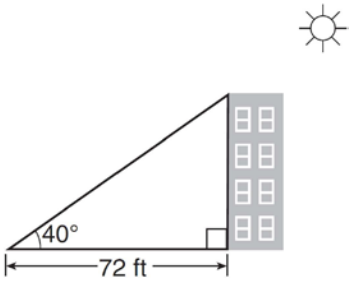
5 In the right triangle shown in the diagram below, what is the value of x to the *nearest whole number*?



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

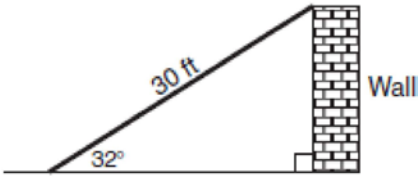


7 As shown in the diagram below, a building casts a 72-foot shadow on the ground when the angle of elevation of the Sun is 40°.



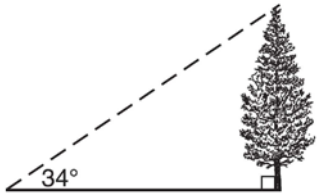
How tall is the building, to the *nearest foot*?

8 The accompanying diagram shows a ramp 30 feet long leaning against a wall at a construction site.



If the ramp forms an angle of 32° with the ground, how high above the ground, to the *nearest tenth*, is the top of the ramp?

9 As shown in the diagram below, the angle of elevation from a point on the ground to the top of the tree is 34°.



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*?

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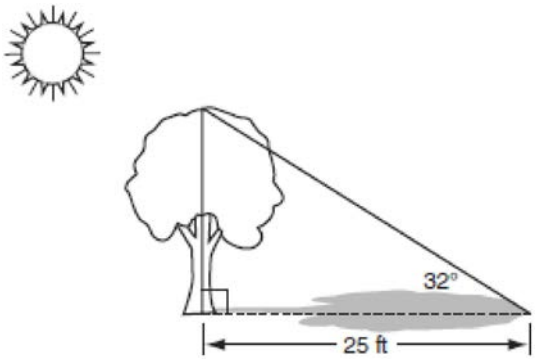
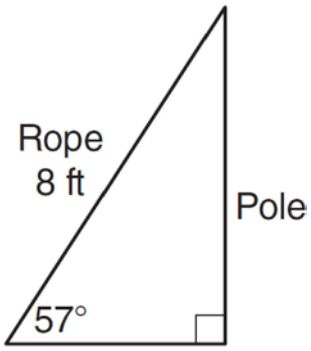
10 A tree casts a 25-foot shadow on a sunny day, as shown in the diagram below.



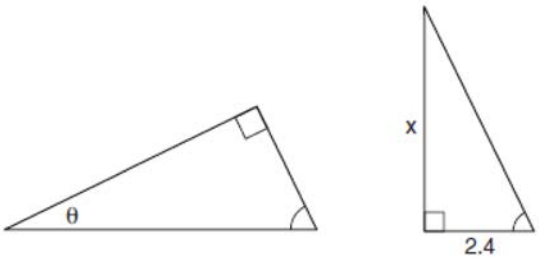
If the angle of elevation from the tip of the shadow to the top of the tree is 32°, what is the height of the tree to the *nearest tenth of a foot*?

11 An 8-foot rope is tied from the top of a pole to a stake in the ground, as shown in the diagram below.



If the rope forms a 57° angle with the ground, what is the height of the pole, to the *nearest tenth of a foot*?

12 The diagram below shows two similar triangles.



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

13 A right triangle contains a 38° angle whose adjacent side measures 10 centimeters. What is the length of the hypotenuse, to the *nearest hundredth of a centimeter*?

14 In right triangle ABC, $m\angle A = 32°$, $m\angle B = 90°$, and $AE = 6.2$ cm. What is the length of $\overline{BC}$, to the *nearest tenth of a centimeter*?

15 A 20-foot support post leans against a wall, making a 70° angle with the ground. To the *nearest tenth of a foot*, how far up the wall will the support post reach?

16 A ladder 20 feet long leans against a building, forming an angle of 71° with the level ground. To the *nearest foot*, how high up the wall of the building does the ladder touch the building?

17 In right triangle ABC, $m\angle C = 90$, $a = 4$, and $\sin A = \frac{1}{2}$. What is the length of the hypotenuse?

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

1 ANS: 1 REF: 010926a
2 ANS: 4 REF: 018933siii
3 ANS: 1 REF: 060419a
4 ANS: 3 REF: 061514a2
5 ANS:
21

$\cos 30 = \frac{x}{24}$

$x \approx 21$

REF: 010912ia
6 ANS:
18

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

$x \approx 18$

REF: 011712geo
7 ANS:
60

$\tan 40 = \frac{x}{72}$

$x \approx 60$

REF: 061516ia
8 ANS:
15.9 ft

$\sin 32 = \frac{x}{30}$

$x \approx 15.9$

REF: 080724a
9 ANS:
13.5

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

$T \approx 13.5$

REF: 061505geo

10 ANS:
15.6

$\tan 32 = \frac{x}{25}$

$x \approx 15.6$

REF: 080914ia

11 ANS:
6.7

$\sin 57 = \frac{x}{8}$

$x \approx 6.7$

REF: 061108ia

12 ANS:
5.6

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

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

$x = 5.6$

REF: 011707geo

13 ANS:
12.69

$\cos 38 = \frac{10}{x}$

$x = \frac{10}{\cos 38} \approx 12.69$

REF: 081126ia

14 ANS:
3.3

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

$x \approx 3.3$

REF: 081719geo

15 ANS:
18.8

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

$x \approx 18.8$

REF: 061611geo

16 ANS:
19

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

$x = 20 \sin 71 \approx 19$

REF: 061721geo

17 ANS:
8

REF: 088725siii