Directions: Please choose the best answer choice for each of the following questions.

1. A parking garage ramp has an angle of elevation of 18 degrees. If a car drives 30 meters up the ramp, approximately how many meters has the car risen from its starting elevation?

   A. 9 meters

   B. 18 meters

   C. 24 meters

   D. 29 meters

Answer Choice Rationale

A. Correct answer.

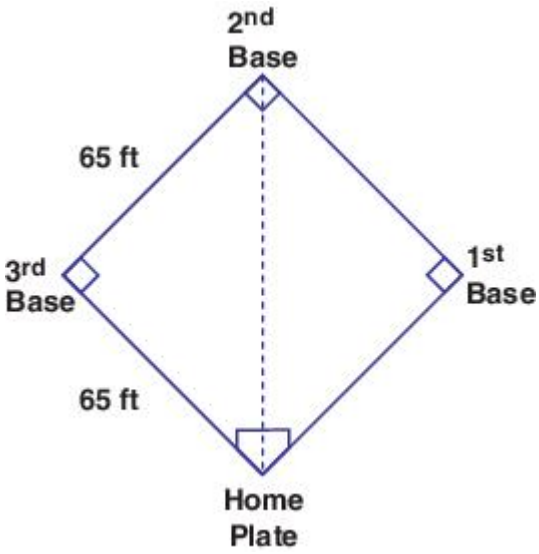
B. The student identified the angle of elevation as the number of meters that the car has risen.

C. The student used the Pythagorean Theorem with 18 meters as the length of one of the legs.

D. The student used the cosine instead of the sine to solve the problem.

ItemID A2K.1211858
Correct A
Standard(s) MA.9-12.MA.912.G.5.4

2. A group of friends organize a softball game. They set the bases 65 feet apart. The line segments between successive bases are perpendicular.



If a player throws the ball from second base to home plate, what is the approximate distance, to the nearest foot, the ball travels?

   A. 65 ft

   B. 92 ft

   C. 113 ft

   D. 130 ft

Answer Choice Rationale

A. This answer mistakes the triangle as being equilateral, and so determines that the missing side length is the same as the two given side lengths.

B. Correct answer.

C. This answer does not use the Pythagorean theorem to finds the hypotenuse of a triangle with legs of 65 ft and 65 ft.

D. This answer adds the lengths of the two given lengths.

ItemID A2K.1012109
Correct B
Standard(s) MA.9-12.MA.912.G.5.4

Go on to the next page »

3. A ladder with a length of 13 feet is leaning against a wall. If the base of the ladder is 5 feet from the wall, how high up the wall does the ladder reach?

   A. 8 feet
   B. 12 feet
   C. 14 feet
   D. 18 feet

Answer Choice Rationale

A. No rationale available
B. Correct
C. No rationale available
D. No rationale available

ItemID A2KC.1087510
Correct B
Standard(s) MA.9-12.MA.912.G.5.4

4. The map shows three towns near Horn College.

What is the distance between Pine City and Oakville?

   A. 5 miles
   B. 15 miles
   C. 25 miles
   D. 32 miles

Answer Choice Rationale

A. No rationale available
B. Correct
C. No rationale available
D. No rationale available

ItemID A2KC.1087508
Correct B
Standard(s) MA.9-12.MA.912.G.5.4

5. Jeremy climbed 2,500 feet up the side of a hill. If he gained 1,500 feet of altitude, how far did he travel in the horizontal direction?

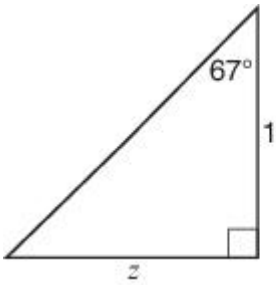
   A. 200 feet
   B. 1000 feet
   C. 2000 feet
   D. 4000 feet

Answer Choice Rationale

A. No rationale available
B. No rationale available
C. Correct
D. No rationale available

ItemID A2KC.1087505
Correct C
Standard(s) MA.9-12.MA.912.G.5.4

6. In the right triangle shown, what is the value to the nearest tenth of z?



sin 67°	= 0.9205
cos 67°	= 0.3907
tan 67°	= 2.3559

   A. 15.2
   B. 24.7
   C. 33.0
   D. 35.8

Answer Choice Rationale

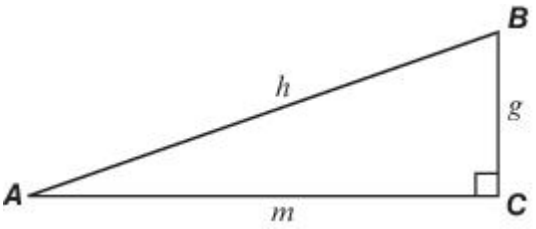
A. No rationale available
B. No rationale available
C. Correct

Go on to the next page »

D. No rationale available

ItemID A2KC.1223911
Correct C
Standard(s) MA.9-12.MA.912.T.2.1

7. Given: Triangle ABC



Which expression represents the ratio of $\sin A$?

A. $\frac{g}{h}$

B. $\frac{m}{h}$

C. $\frac{h}{g}$

D. $\frac{g}{m}$

Answer Choice Rationale

A. Correct answer.

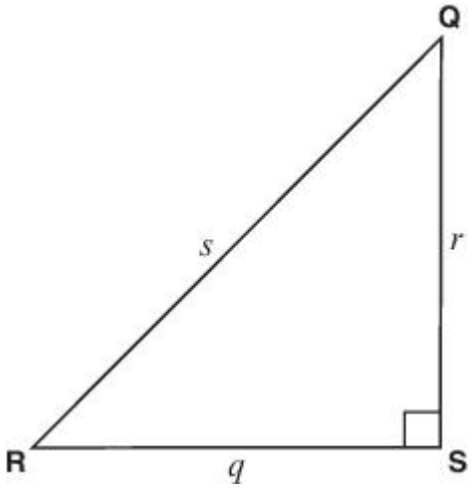
B. This expression represents the ratio of cos *A*.

C. This answer is found by mistaking sin as being hypotenuse over opposite instead of opposite over hypotenuse.

D. This expression represents the ratio of tan *A*.

ItemID A2K.1019698
Correct A
Standard(s) MA.9-12.MA.912.T.2.1

8. A surveyor drew ΔQRS to represent a scale drawing of a piece of land.



Which ratio can be used to find the tangent of $\angle R$?

A. $\frac{r}{q}$

B. $\frac{r}{s}$

C. $\frac{q}{r}$

D. $\frac{q}{s}$

Answer Choice Rationale

A. Correct answer

B. This is the sine ratio.

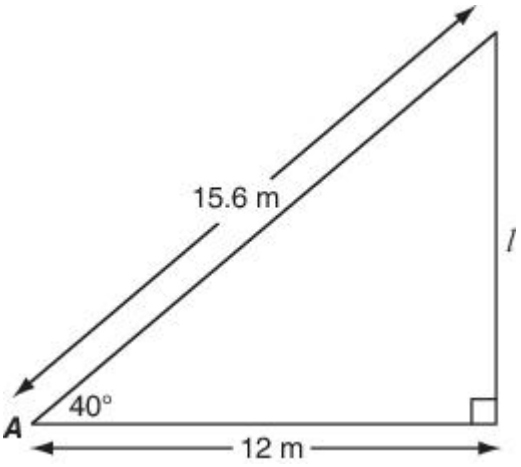
C. This is the cotangent ratio.

D. This is the cosine ratio.

ItemID A2K.1014347
Correct A
Standard(s) MA.9-12.MA.912.T.2.1

Go on to the next page »

9. Karen is using this design for her new flower garden.



Which statement can be used to determine l, the length of one side of the flower garden?

A. $\tan 40^\circ = \frac{12}{l}$

B. $\tan 40^\circ = \frac{l}{12}$

C. $\tan 40^\circ = \frac{l}{15.6}$

D. $\tan 40^\circ = \frac{15.6}{l}$

Answer Choice Rationale

A. This answer uses tan as adjacent over opposite instead of opposite over adjacent.

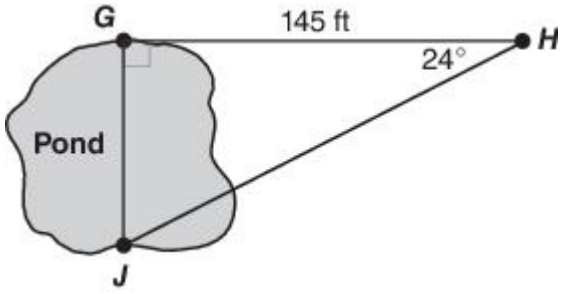
B. Correct answer.

C. This answer uses tan as adjacent over hypotenuse, when cos is opposite over hypotenuse.

D. This answer uses tan as hypotenuse over adjacent, when cosec is hypotenuse over adjacent.

ItemID A2K.1024784
Correct B
Standard(s) MA.9-12.MA.912.T.2.1

10. To measure the distance across a pond, a surveyor measured the distance from G to H as 145 feet.



If the measure of $\angle GHJ$ is 24°, what is the approximate distance from G to J across the pond?

A. 132 feet

B. 121 feet

C. 65 feet

D. 59 feet

Answer Choice Rationale

A. Incorrectly using the cosine function and then multiplying this answer by 145, gives an answer of 132 feet. Instead, use the tangent function to find the length of $\overline{GJ}$. That is, $\tan(24) = \frac{\overline{GJ}}{145}$.

B. To calculate the incorrect answer of 121, subtract the degree measure of 24 from the length of 145. These are incompatible measurements, however. Instead, use the tangent function. That is, $\tan(24) = \frac{\overline{GJ}}{145}$.

C. Correct answer.

D. Incorrectly using the sine function for the angle measuring 24 degrees, the answer would be 59 feet. Instead, to find the length of $\overline{GJ}$, use the tangent function. That is, $\tan(24) = \frac{\overline{GJ}}{145}$.

ItemID A2K.1012153
Correct C
Standard(s) MA.9-12.MA.912.T.2.1

Stop! You have finished this exam.