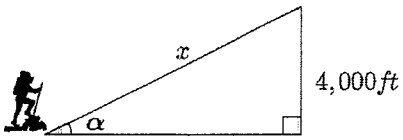
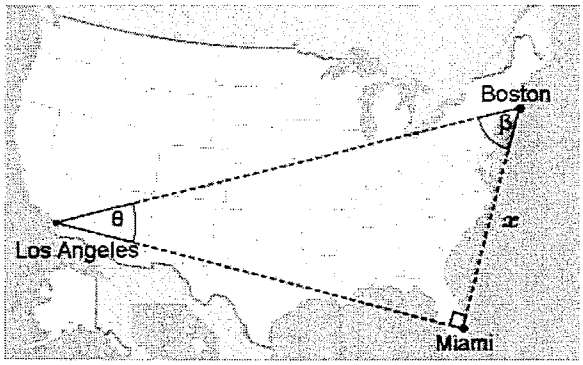
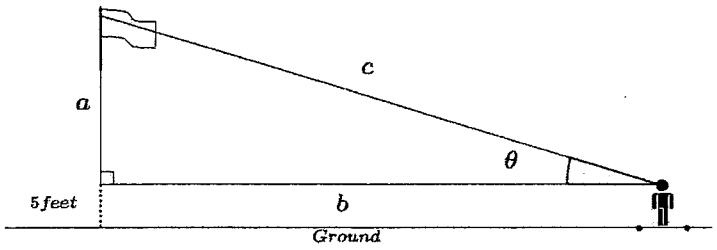
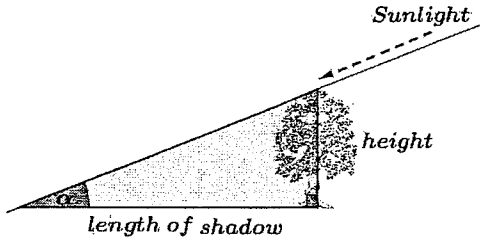
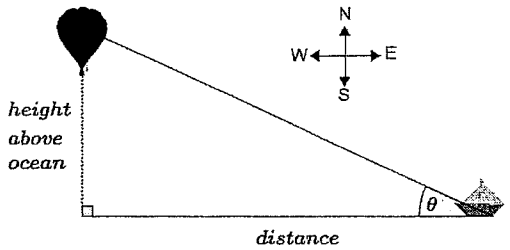
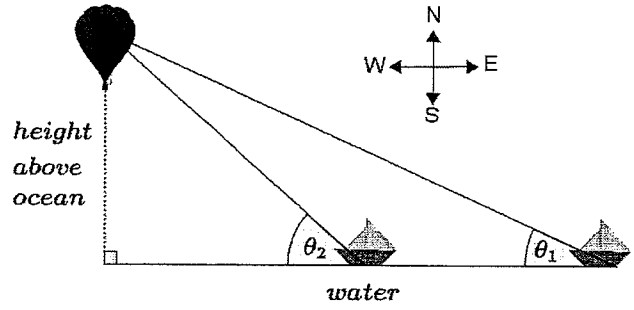
Bellringers - Unit 3

Name: _____

Basic Trigonometry Ratio's with Word Problems

Question	Diagram	Answer Choices
1.) A hiker sets out to climb a mountain with a 4,000 ft vertical ascent as shown in the diagram below. If the angle of incline, $\alpha = 12°$ what is to total distance he has to travel to reach the summit, to the nearest whole foot?		A. 4,090 ft B. 5,000 ft C. 19239 ft D. 20,000 ft E. 25,264 ft
2.) An airplane departs Miami every morning and flies to Boston and then from Boston to Los Angeles as shown in the diagram below. If the plane takes off from Boston at an angle, $\beta = 60°$ and the distance from Boston to Los Angeles is approximately 3,000 miles, what is the distance, to the nearest mile, between Miami and Boston?		A. 1000 miles B. 1500 miles C. 2000 miles D. 2598 miles E. 3000 miles
3.) A man who is 5 feet tall looks up at an angle of 15°and sees a flag as shown in the diagram below. If they flag is waving 80 ft above the ground ($a = 75\ ft$) then how far from the flag is the man standing, to the nearest whole foot?		A. 21 ft B. 78 ft C. 200 ft D. 280 ft E. 290 ft
4.) A tree casts a shadow near dusk as shown in the following diagram. If the shadow is 85 feet long and the sun sits 20° above the horizon ($\alpha = 20°$), how tall is the tree, to the nearest foot?		A. 29 ft B. 31 ft C. 50 ft D. 80 ft E. 280 ft
5.) A sailboat is traveling due west as shown in the diagram below. A man on the front of the boat looks up at 3 P.M in the afternoon and looks up at an angle, $\theta = 25°$, and sees a hot air balloon attached to the ocean floor by a string. 2 hours later the man realizes they are directly under the balloon, which hasn't moved, and it is exactly 3,000 meters above the water line. Approximately how fast is the boat traveling, in kilometers per hour?		A. 0.7 km/hr B. 1.44 km/hr C. 2 km/hr D. 3.2 km/hr E. 6.4 km/hr

6.) A hot air balloon sits in a fixed position as a boat travels due westward towards the balloon, as in the diagram below. A sailor notices that the balloon *appears* higher in the sky as the boat travels west. If the balloon is 2.5 kilometers above the ocean, and $\theta_1 = 25°$ at 3 PM and $\theta_2 = 40°$ at 5 PM how fast is the boat traveling?



A. 0.5 km/hr

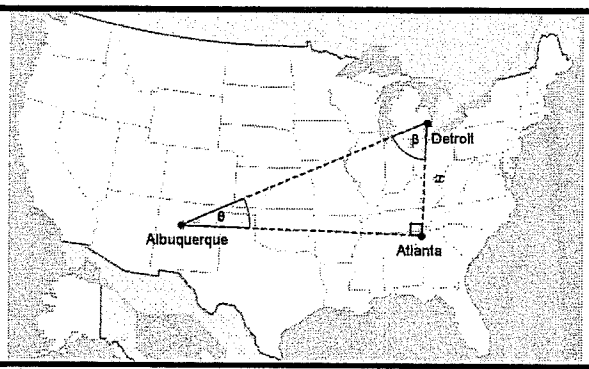
B. 1.0 km/hr

C. 1.2 km/hr

D. 2.4 km/hr

E. 3.0 km/hr

7.) An airplane has a route map as shown below. If the plane arrives to Detroit from Atlanta and then departs at a 65° angle, $\beta = 65°$, then travels 1640 miles to Albuquerque, what is the approximate distance between Atlanta and Detroit?



A. 685 miles

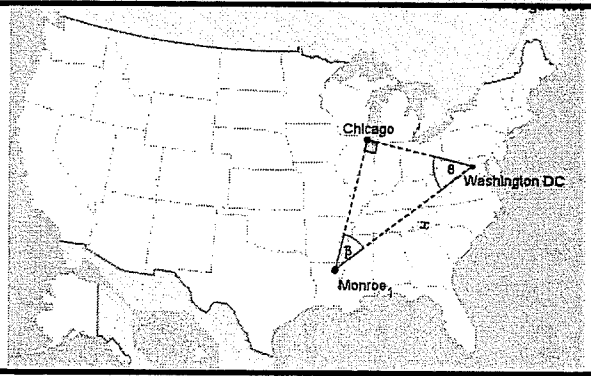
B. 1485 miles

C. 1810 miles

D. 2000 miles

E. 3880 miles

8.) Three US Cities are shown below on a map that is approximately to scale. If the angle centered at Monroe is 40° and the distance from Chicago to Washington DC is 690 miles, which of the following gives the closest approximation to the distance between Washington DC and Monroe?



A. 690 miles

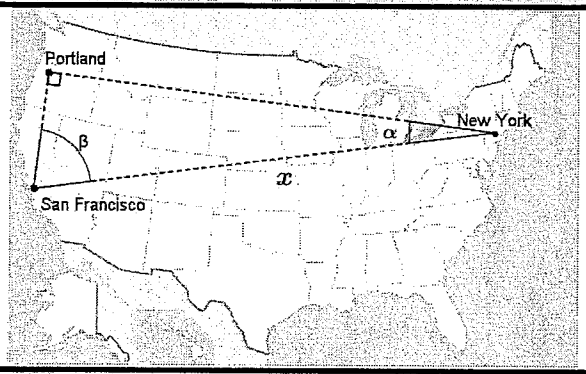
B. 750 miles

C. 840 miles

D. 1090 miles

E. 1300 miles

9.) A triangle is drawn between three major US cities on a map drawn approximately to scale below. If the angle centered at San Francisco is 75°and the distance between Portland and New York is 2,920 miles, which of the following is the closest approximation to the distance between New York and San Francisco?



A. 750 miles

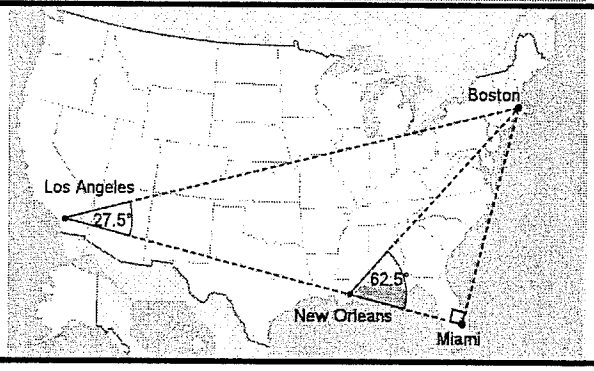
B. 1040 miles

C. 1500 miles

D. 2820 miles

E. 3020 miles

10.) Four major US cities are shown on a map that is approximately drawn to scale below. If the distance between Boston and Los Angeles is approximately 3010 miles, what is the best approximation to the distance between New Orleans and Miami?



A. 700 miles

B. 720 miles

C. 740 miles

D. 1390 miles

E. 2670 miles

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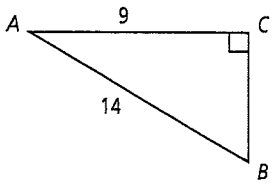
14-3 Standardized Test Prep

Right Triangles and Trigonometric Ratios

Multiple Choice

For Exercises 1–4, choose the correct letter.

1. Which equation could be used to find the measure of one acute angle in the right triangle at the right?



Ⓐ $\tan B = \frac{14}{9}$ Ⓒ $\tan B = \frac{9}{14}$

Ⓑ $\cos A = \frac{9}{14}$ Ⓓ $\sin A = \frac{9}{14}$

2. In $\triangle ABC$, $\angle C$ is a right angle and $\tan B = \frac{12}{35}$. What is $\sec A$?

Note: $\sec A = \frac{hyp}{adj}$

Ⓕ $\frac{12}{37}$ Ⓖ $\frac{37}{12}$ Ⓗ $\frac{35}{12}$ Ⓘ $\frac{12}{35}$

3. Which is the angle measure in degrees for $\tan^{-1} 0.355$?

Ⓐ 19.5° Ⓑ 20.8° Ⓒ 34° Ⓓ 69.2°

4. A kite is on a 300-ft string. The angle of elevation from the ground to the kite is 39°. Which is the best estimate of the height of the kite above the ground?

Ⓕ 629 ft Ⓖ 243 ft Ⓗ 189 ft Ⓘ 233 ft

Extended Response

5. What are the measures of the acute angles of a right triangle, to the nearest tenth, if the legs are 48 in. and 55 in.? Show your work.

(3)

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14-4 Standardized Test Prep

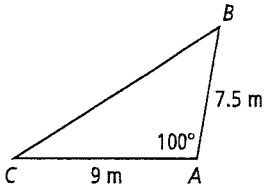
Area and the Law of Sines

Gridded Response

Solve each exercise and enter your answer in the grid provided.

1. What is the area of the triangle at the right? Round your answer to the nearest tenth of a meter.

Note: Area = $\frac{1}{2}bc\sin A$



2. A triangle has side lengths 202 ft and 201.5 ft, and the measure of the angle between them is 82.5°. What is the area of the triangle? Round your answer to the nearest square foot. Note: Area = $\frac{1}{2}bc\sin A$

3. In $\triangle ABC$, $m\angle A = 38°$, $m\angle C = 32°$, and $BC = 40$ cm. What is the length of AC? Round your answer to the nearest tenth of a centimeter.

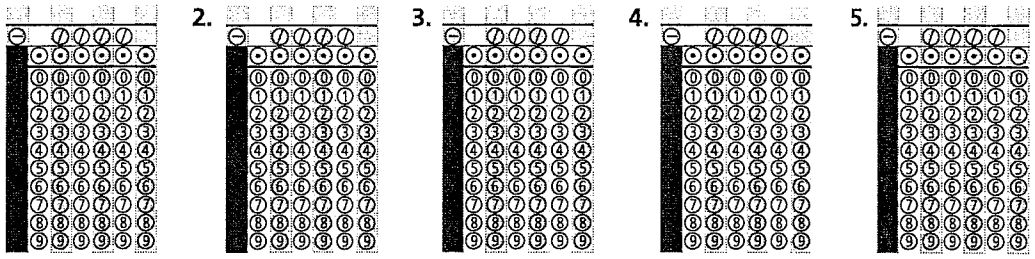
For Exercises 4 and 5, use $\triangle XYZ$, where $x = 10$, $z = 6$, and $m\angle X = 115°$.

4. What is $m\angle Y$? Round your answer to the nearest tenth.

5. What is the value of sin Z? Round your answer to the nearest thousandth.

Answers

1. 2. 3. 4. 5.



(4)

Name _____ Class _____ Date _____

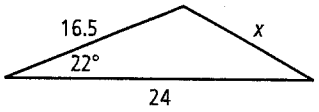
14-5 Standardized Test Prep

The Law of Cosines

Multiple Choice

For Exercises 1–5, choose the correct letter.

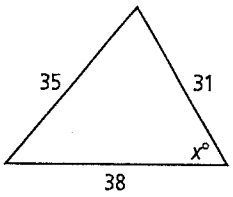
1. What is length x to the nearest tenth?



Ⓐ 10.7 Ⓒ 39.8

Ⓑ 21.9 Ⓓ 113.9

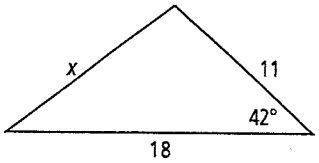
2. What is measure x to the nearest tenth?



Ⓕ 7.7° Ⓗ 59.9°

Ⓖ 50.1° Ⓘ 70.0°

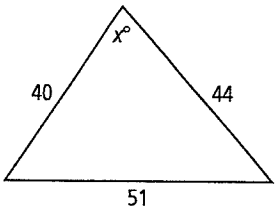
3. What is length x to the nearest tenth?



Ⓐ 27.2 Ⓒ 13.4

Ⓑ 17.3 Ⓓ 12.3

4. What is measure x to the nearest tenth?



Ⓕ 36.5° Ⓗ 56.3°

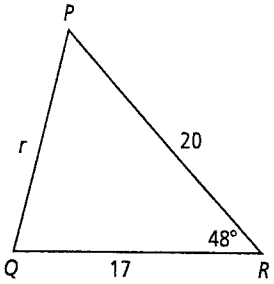
Ⓖ 49.1° Ⓘ 74.6°

5. In $\triangle ABC$, $a = 20$, $b = 12$, and $c = 30$. What is the area of $\triangle ABC$ to the nearest tenth?

Ⓐ 75.5 units^2 Ⓑ 80.5 units^2 Ⓒ 85 units^2 Ⓓ 95 units^2

Short Response

6. Find the remaining side and angles in the triangle.



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