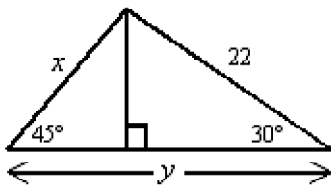


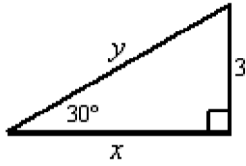
M2U22

- _____ 1. Which set of lengths cannot form a right triangle?
 a. 6 mm, 12 mm, 13 mm c. 2.5 mm, 6 mm, 6.5 mm
 b. 5 mm, 12 mm, 13 mm d. 10 mm, 24 mm, 26 mm
- _____ 2. Choose the set that is the possible side lengths of a right triangle.
 a. 1, 1, 2 c. 3, 4, 7
 b. 1, 1, $\sqrt{2}$ d. 3, 5, 9
- _____ 3. Choose the set that is the possible side lengths of a right triangle.
 a. 4, 9, 13 c. 1, 1, 2
 b. $\sqrt{2}$, $\sqrt{2}$, 2 d. 8, 15, 25
- _____ 4. In a 45° - 45° - 90° triangle, the ratio of the length of the hypotenuse to the length of a side is _____.
 a. 1:1 b. $\sqrt{3}:1$ c. $\sqrt{2}:1$ d. 2:1
- _____ 5. The shorter leg of a 30° - 60° - 90° triangle is 8.5 feet long. Find the perimeter.
 a. $(25.5 + 8.5\sqrt{2})$ ft c. $(17 + 8.5\sqrt{2})$ ft
 b. $(17 + 8.5\sqrt{3})$ ft d. $(25.5 + 8.5\sqrt{3})$ ft
- _____ 6. Which of the following *cannot* be the lengths of a 30° - 60° - 90° triangle?
 a. $\frac{21}{13}$, $\frac{42}{13}$, $\frac{21}{13}\sqrt{3}$ c. 27, 54, $27\sqrt{3}$
 b. 23, 46, $46\sqrt{3}$ d. 6, 12, $6\sqrt{3}$
- _____ 7. An equilateral triangle has side lengths of 10. The length of its altitude is _____.
 a. $10\sqrt{5}$ b. 5 c. $5\sqrt{10}$ d. $5\sqrt{3}$
- _____ 8. In a 30° - 60° - 90° triangle, the ratio of the length of the hypotenuse to the length of the shorter side is _____.
 a. $2:\sqrt{3}$ b. $\sqrt{2}:1$ c. 2:1 d. $\sqrt{3}:1$
9. Find the value of x and y .

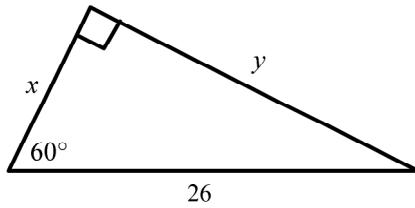


10. What is the length of the diagonal of a square with side lengths $7\sqrt{2}$?
11. The length of the diagonal of a square is 22. What is the length of each side?

12. Find the value of x and y .

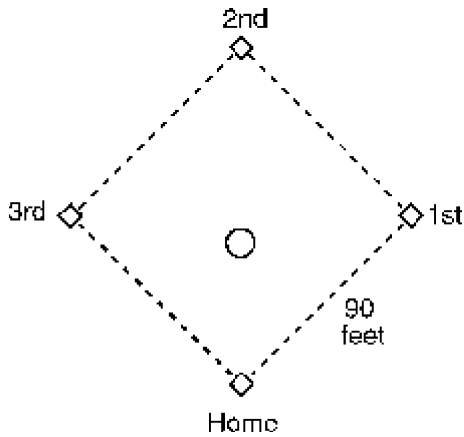


13. Find the value of x and y .

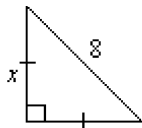


14. What is the length of an altitude of an equilateral triangle with side lengths $8\sqrt{3}$?

15. A baseball "diamond" is a square with a side length of 90 feet. How far is the throw from third base to first base? (Round your answer to one decimal place.)



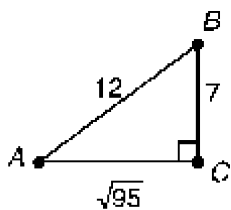
16. Find the value of x .



Name: _____

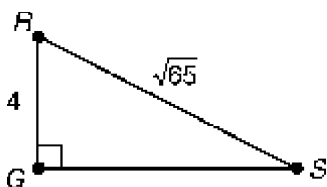
ID: A

____ 17. The tangent of $\angle B$ is ____.

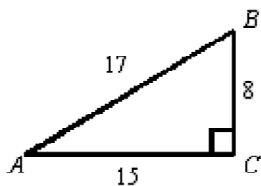


- a. $\frac{\sqrt{95}}{7}$ b. $\frac{\sqrt{95}}{12}$ c. $7\sqrt{95}$ d. $\frac{12}{7}$

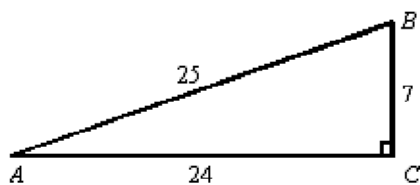
18. Find $\tan S$.



19. Find $\tan A$ for the right triangle below:

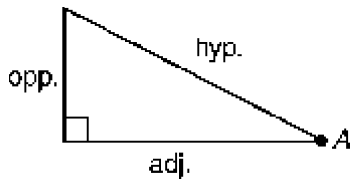


____ 20. Write $\cos B$.



- a. $\frac{24}{25}$ b. $\frac{7}{25}$ c. $\frac{7}{24}$ d. $\frac{24}{7}$

_____ 21. The cosine of $\angle A$ is the ratio _____.

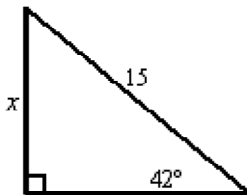


- a. $\frac{\text{adj.}}{\text{hyp.}}$ b. $\frac{\text{opp.}}{\text{hyp.}}$ c. $\frac{\text{hyp.}}{\text{adj.}}$ d. $\frac{\text{opp.}}{\text{adj.}}$

_____ 22. A slide 4.1 m long makes an angle of 27° with the ground. How high is the top of the slide above the ground?

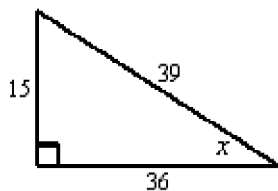
- a. 1.86 m b. 3.65 m c. 1.93 m d. 2.09 m

_____ 23. What is x to the nearest hundredth? (not drawn to scale)



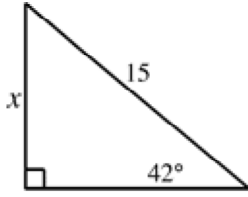
- a. $x = 16.66$ b. $x = 13.51$ c. $x = 11.15$ d. $x = 10.04$

_____ 24. Use the diagram to find $\cos x$ as a fraction in simplest form.



- a. $\frac{12}{13}$ c. $\frac{5}{12}$
 b. $2\frac{2}{5}$ d. $\frac{5}{13}$

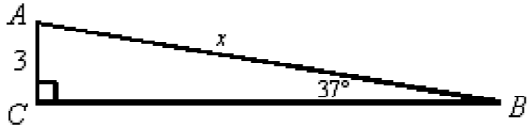
____ 25. Find x . Round the result to the nearest hundredth.



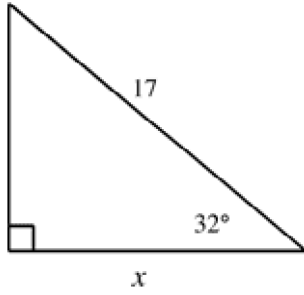
- a. $x = 13.51$
- b. $x = 11.15$
- c. $x = 10.04$
- d. $x = 16.66$

26. To find the height of a tower, a surveyor positions a transit that is 2 meters tall at a spot 40 meters from the base of the tower. She measures the angle of elevation to the top of the tower to be 46° . What is the height of the tower, to the nearest meter?

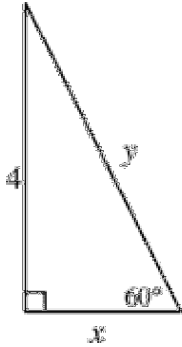
27. Find the value of x , to the nearest whole number. (not drawn to scale)



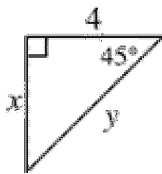
28. Find the value of x , to the nearest hundredth.



29. Find the missing side lengths for x and y .

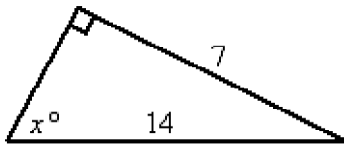


30. Find the missing side lengths for x and y .



- _____ 31. Assume that $\angle A$ is an acute angle and $\tan A = 1.230$. The measure of $\angle A$ is _____.
- | | |
|-----------------------|------------------------|
| a. about 39.1° | c. about 50.9° |
| b. about 7.01° | d. about 129.9° |

_____ 32. Solve for x to the nearest degree.



- | | | | |
|-------|-------|-------|-------|
| a. 30 | b. 63 | c. 60 | d. 27 |
|-------|-------|-------|-------|
- _____ 33. Two legs of a right triangle have lengths 15 and 8. The measure of the smaller acute angle is _____.
- | | | | |
|-------------------------|-----------------------|-------------------------|-------------------------|
| a. $\approx 32.2^\circ$ | b. $\approx 17^\circ$ | c. $\approx 61.9^\circ$ | d. $\approx 28.1^\circ$ |
|-------------------------|-----------------------|-------------------------|-------------------------|

M2U22

Answer Section

1. ANS: A PTS: 1 DIF: Level B REF: DITT0026
 NAT: NCTM 9-12.GEO.1.a TOP: Lesson 7.2 Use the Converse of the Pythagorean Theorem
 KEY: right triangles | Pythagorean Theorem converse BLM: Knowledge
 NOT: 978-0-618-65613-4
2. ANS: B PTS: 1 DIF: Level B REF: MLGE0156
 TOP: Lesson 7.2 Use the Converse of the Pythagorean Theorem
 KEY: right triangles | Pythagorean Theorem converse BLM: Knowledge
 NOT: 978-0-618-65613-4
3. ANS: B PTS: 1 DIF: Level B REF: MLGE0157
 TOP: Lesson 7.2 Use the Converse of the Pythagorean Theorem
 KEY: right triangles | sides | Pythagorean Theorem converse BLM: Knowledge
 NOT: 978-0-618-65613-4
4. ANS: C PTS: 1 DIF: Level A REF: HLGM0728
 NAT: NCTM 9-12.GEO.1.a TOP: Lesson 7.4 Special Right Triangles
 KEY: special right triangles | 45-45-90 triangle BLM: Knowledge
 NOT: 978-0-618-65613-4
5. ANS: D PTS: 1 DIF: Level B REF: DBXM1015
 TOP: Lesson 7.4 Special Right Triangles
 KEY: special right triangles | 30-60-90 triangle BLM: Comprehension
 NOT: 978-0-618-65613-4
6. ANS: B PTS: 1 DIF: Level B REF: PHGM0523
 NAT: NCTM 9-12.GEO.1.a TOP: Lesson 7.4 Special Right Triangles
 KEY: special right triangles | 30-60-90 triangle BLM: Knowledge
 NOT: 978-0-618-65613-4
7. ANS: D PTS: 1 DIF: Level B REF: HLGM0725
 NAT: NCTM 9-12.GEO.1.a TOP: Lesson 7.4 Special Right Triangles
 KEY: equilateral triangle | altitude | 30-60-90 triangle BLM: Comprehension
 NOT: 978-0-618-65613-4
8. ANS: C PTS: 1 DIF: Level B REF: HLGM0729
 NAT: NCTM 9-12.GEO.1.a TOP: Lesson 7.4 Special Right Triangles
 KEY: 30-60-90 triangle BLM: Knowledge NOT: 978-0-618-65613-4
9. ANS:
 $x = 11\sqrt{2}$, $y = 11 + 11\sqrt{3}$ or $11(1 + \sqrt{3})$
 PTS: 1 DIF: Level A REF: AGE00706 NAT: NCTM 9-12.GEO.1.a
 TOP: Lesson 7.4 Special Right Triangles
 KEY: special right triangles | 45-45-90 triangle | 30-60-90 triangle
 BLM: Knowledge NOT: 978-0-618-65613-4
10. ANS:
 14
 PTS: 1 DIF: Level B REF: MLGE0161 TOP: Lesson 7.4 Special Right Triangles
 KEY: special right triangles | 45-45-90 triangle BLM: Comprehension
 NOT: 978-0-618-65613-4

11. ANS:

$$11\sqrt{2}$$

PTS: 1 DIF: Level B REF: HLG M0722 NAT: NCTM 9-12.GEO.1.a
 TOP: Lesson 7.4 Special Right Triangles
 KEY: special right triangles | 45-45-90 triangle BLM: Comprehension
 NOT: 978-0-618-65613-4

12. ANS:

$$x = 3\sqrt{3}, y = 6$$

PTS: 1 DIF: Level A REF: AGE O0705 TOP: Lesson 7.4 Special Right Triangles
 KEY: special right triangles | 30-60-90 triangle BLM: Knowledge
 NOT: 978-0-618-65613-4

13. ANS:

$$x = 13, y = 13\sqrt{3}$$

PTS: 1 DIF: Level A REF: GGEO0804 TOP: Lesson 7.4 Special Right Triangles
 KEY: special right triangles | 30-60-90 triangle BLM: Knowledge
 NOT: 978-0-618-65613-4

14. ANS:

12

PTS: 1 DIF: Level B REF: MLGE0162 TOP: Lesson 7.4 Special Right Triangles
 KEY: equilateral triangle | altitude | 30-60-90 triangle BLM: Comprehension
 NOT: 978-0-618-65613-4

15. ANS:

127.3 ft

PTS: 1 DIF: Level B REF: HLG M0703
 NAT: NCTM 9-12.PRS.2 | NCTM 9-12.GEO.1.a TOP: Lesson 7.4 Special Right Triangles
 KEY: word | real-world | hypotenuse | 45-45-90 triangle BLM: Application
 NOT: 978-0-618-65613-4

16. ANS:

$$x = 4\sqrt{2}$$

PTS: 1 DIF: Level B REF: BS022389 TOP: Lesson 7.4 Special Right Triangles
 KEY: special right triangles | 45-45-90 triangle BLM: Knowledge
 NOT: 978-0-618-65613-4

17. ANS: A

PTS: 1

DIF: Level A

REF: HLG M0738

TOP: Lesson 7.5 Apply the Tangent Ratio

KEY: tangent ratio

BLM: Knowledge NOT: 978-0-618-65613-4

18. ANS:

$$\frac{4}{7}$$

PTS: 1 DIF: Level A REF: HLG M0739 TOP: Lesson 7.5 Apply the Tangent Ratio
 KEY: tangent ratio BLM: Knowledge NOT: 978-0-618-65613-4

19. ANS:
 $\frac{8}{15}$
- PTS: 1 DIF: Level A REF: MLGM0046 TOP: Lesson 7.5 Apply the Tangent Ratio
 KEY: tangent ratio BLM: Knowledge NOT: 978-0-618-65613-4
20. ANS: B PTS: 1 DIF: Level A REF: MHGM0136
 TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
 KEY: sine and cosine ratios | trigonometric ratios BLM: Knowledge
 NOT: 978-0-618-65613-4
21. ANS: A PTS: 1 DIF: Level A REF: HLGM0734
 TOP: Lesson 7.6 Apply the Sine and Cosine Ratios KEY: sine and cosine ratios
 BLM: Knowledge NOT: 978-0-618-65613-4
22. ANS: A PTS: 1 DIF: Level A REF: MOT90315
 NAT: NCTM 9-12.PRS.2 | NCTM 9-12.GEO.1.d
 TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
 KEY: word | trigonometric ratios | sine and cosine ratios BLM: Knowledge
 NOT: 978-0-618-65613-4
23. ANS: D PTS: 1 DIF: Level A REF: MLGE0381
 NAT: NCTM 9-12.GEO.1.d TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
 KEY: sine and cosine ratios BLM: Knowledge NOT: 978-0-618-65613-4
24. ANS: A PTS: 1 DIF: Level B REF: PMG80821
 TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
 KEY: trigonometric ratios | sine and cosine ratios BLM: Knowledge
 NOT: 978-0-618-65613-4
25. ANS: C PTS: 1 DIF: Level B REF: MAL21674
 TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
 KEY: sine and cosine ratios | right triangles BLM: Knowledge
 NOT: 978-0-618-65613-4
26. ANS:
 43 m
- PTS: 1 DIF: Level B REF: MHGM0094
 NAT: NCTM 9-12.GEO.1.d | NCTM 9-12.PRS.2
 TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
 KEY: word | trigonometric ratios | tangent ratio BLM: Application
 NOT: 978-0-618-65613-4
27. ANS:
 5
- PTS: 1 DIF: Level B REF: MLGE0380 NAT: NCTM 9-12.GEO.1.d
 TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
 KEY: trigonometric ratios | sine and cosine ratios BLM: Knowledge
 NOT: 978-0-618-65613-4

28. ANS:
14.42

PTS: 1 DIF: Level B REF: MAL21673
TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
KEY: word | sine and cosine ratios | right triangles BLM: Knowledge
NOT: 978-0-618-65613-4

29. ANS:

$$x = \frac{4\sqrt{3}}{3}, y = \frac{8\sqrt{3}}{3}$$

PTS: 1 DIF: Level B REF: MAL21700 NAT: NCTM 9-12.GEO.1.d
TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
KEY: sine and cosine ratios | right triangles BLM: Knowledge
NOT: 978-0-618-65613-4

30. ANS:

$$x = 4, y = 4\sqrt{2}$$

PTS: 1 DIF: Level B REF: MAL21701 NAT: NCTM 9-12.GEO.1.d
TOP: Lesson 7.6 Apply the Sine and Cosine Ratios
KEY: sine and cosine ratios | right triangles BLM: Knowledge
NOT: 978-0-618-65613-4

31. ANS: C PTS: 1

NAT: NCTM 9-12.GEO.1.d
KEY: inverse tangent

DIF: Level A REF: HLG M0743

TOP: Lesson 7.7 Solve Right Triangles
BLM: Knowledge NOT: 978-0-618-65613-4

32. ANS: A PTS: 1

NAT: NCTM 9-12.GEO.1.d
KEY: sine and cosine ratios

DIF: Level A REF: PHGM1106

TOP: Lesson 7.7 Solve Right Triangles
BLM: Knowledge NOT: 978-0-618-65613-4

33. ANS: D PTS: 1

NAT: NCTM 9-12.GEO.1.d
KEY: solving right triangles

DIF: Level B REF: HLG M0749

TOP: Lesson 7.7 Solve Right Triangles
BLM: Knowledge NOT: 978-0-618-65613-4