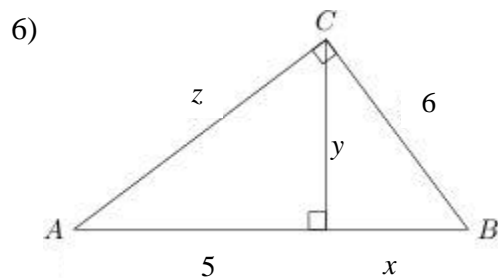
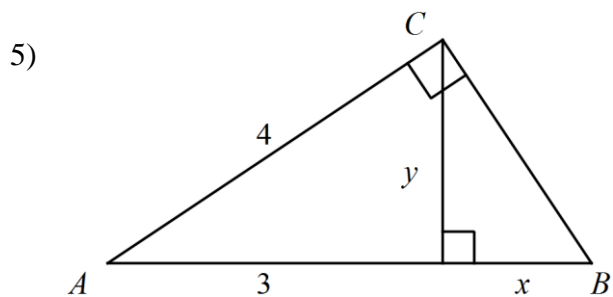
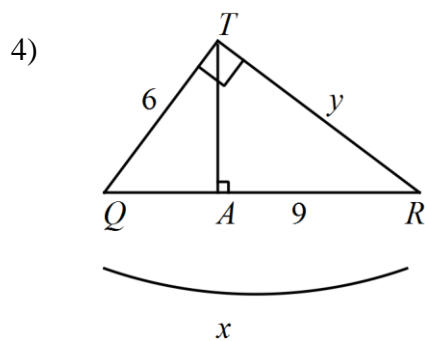
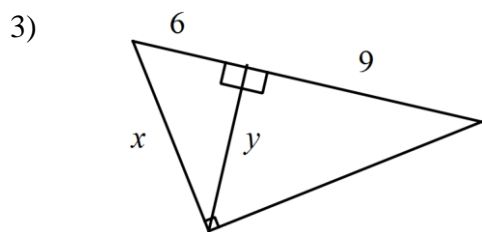
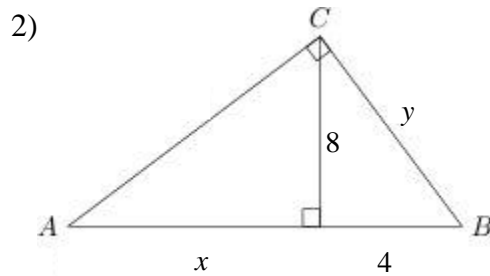
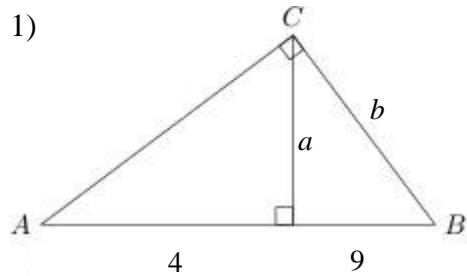
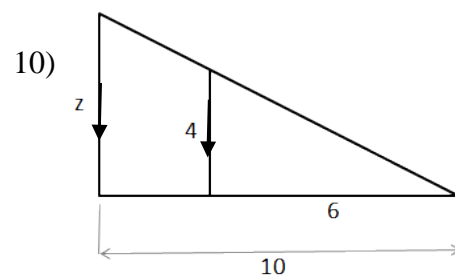
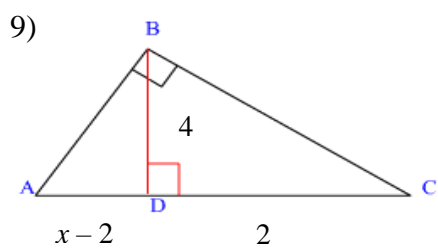
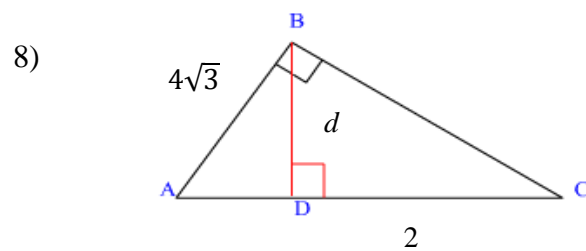
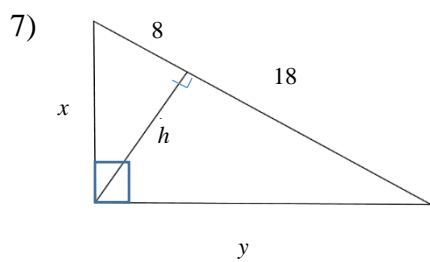


Formal Geometry
Worksheet 8.1

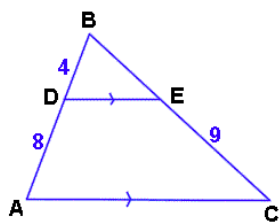
Name _____

Directions: Solve for the variable(s), and show all work. Use exact answers only (no decimals.)

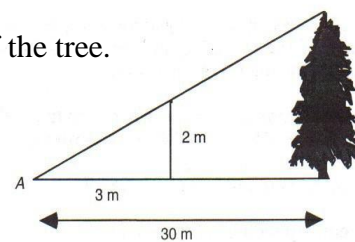




11) Find BE and BC.

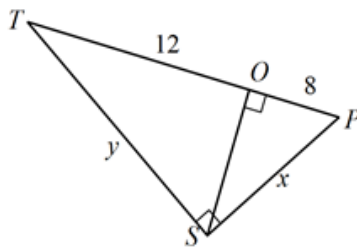


12) Find the height of the tree.



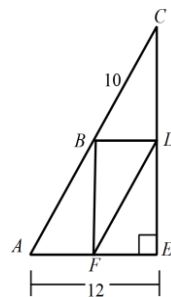
- 13) Use the diagram to find the values of x and y .

- A. $x = 4\sqrt{10}$, $y = 4\sqrt{15}$
- B. $x = 4\sqrt{10}$, $y = 4\sqrt{19}$
- C. $x = 4\sqrt{6}$, $y = 4\sqrt{15}$
- D. $x = 4\sqrt{6}$, $y = 4\sqrt{19}$

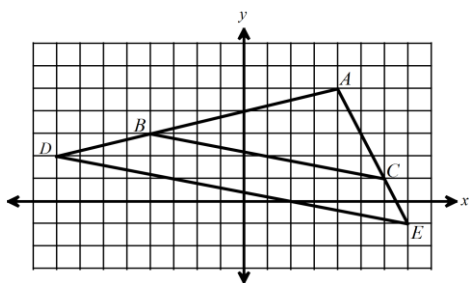


- 14) In the diagram below \overline{BD} , \overline{DF} , and \overline{BF} are midsegments and $BC = 10$ and $AE = 12$. Compare the perimeters of $\triangle CDB$ and $\triangle DEF$, then choose the statement below that is true.

- A. The perimeter of $\triangle CDB$ is greater.
- B. The perimeter of $\triangle DEF$ is greater.
- C. A relationship cannot be determined.
- D. The perimeters are the same.



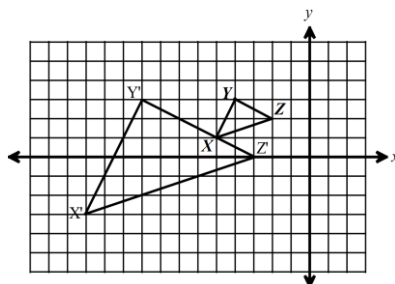
- 15) Which method **cannot** be used in a coordinate proof to prove $\triangle ABC \sim \triangle ADE$?



- A. Use the Distance Formula to show $\frac{AB}{AD} = \frac{AC}{AE}$, and $\angle A \cong \angle A$ by the Reflexive Property of Congruence. ($SAS \sim$)
- B. Use the Distance Formula to show $\frac{AB}{AD} = \frac{AC}{AE} = \frac{BC}{DE}$. ($SSS \sim$)
- C. Use the Reflexive Property of Congruence to show $\angle A \cong \angle A$, then measure to show $\angle ABC \cong \angle D$. ($AA \sim$)

- D. Use the slope formula to show that the slope of \overline{BC} and \overline{DE} are equal so $\overline{BC} \parallel \overline{DE}$ and corresponding angles are congruent. ($AA \sim$)

16. Three students were asked to explain which transformations map the pre-image of $\triangle XYZ$ onto the image $\triangle X'Y'Z'$ in the diagram below.



Based on the following responses, whose reasoning is correct?

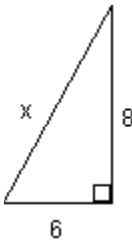
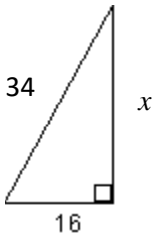
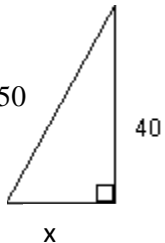
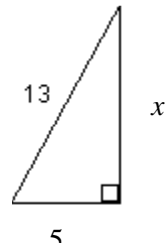
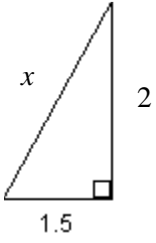
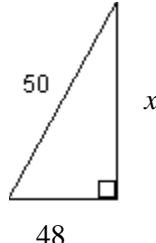
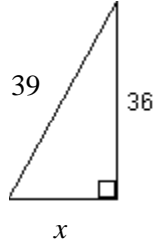
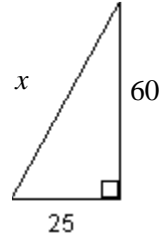
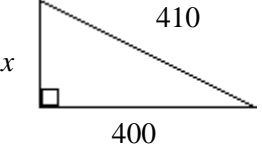
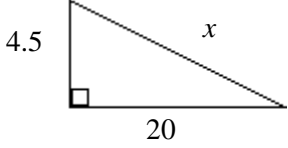
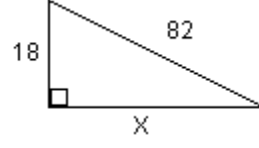
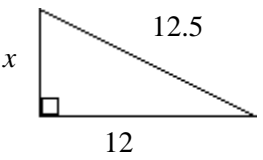
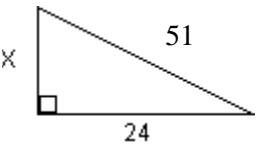
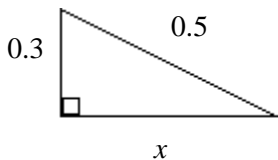
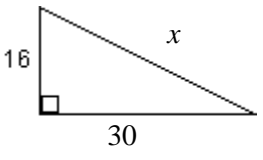
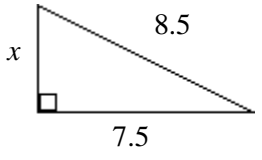
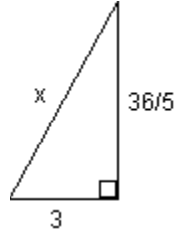
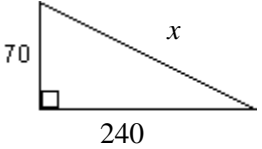
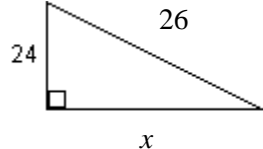
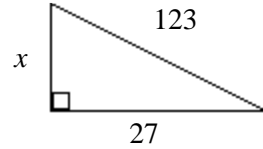
- Jason says the image is result of translating the pre-image along the vector $\langle 1, -2 \rangle$ and performing a dilation with a scale factor of 3.
- Sanjay says the pre-image is rotated 180° about the origin and dilated by a scale factor of 3.
- Teresa says the image is a result of applying the rule $(x, y) \rightarrow (3(x + 1), 3(y - 2))$.

- A. Jason and Teresa are correct.
- B. Sanjay and Jason are correct.
- C. Only Jason is correct.
- D. Jason, Sanjay, and Teresa are all correct.

Answers: 1) $a = 6, b = 3\sqrt{13}$ 2) $x = 16, y = 4\sqrt{5}$ 3) $x = 3\sqrt{10}; y = 3\sqrt{6}$ 4) $x = 12, y = 6\sqrt{3}$
 5) $x = \frac{7}{3}; y = \sqrt{7}$ 6) $x = 4; y = 2\sqrt{5}; z = 3\sqrt{5}$ 7) $h = 12, x = 4\sqrt{13}; y = 6\sqrt{13}$ 8) $2\sqrt{3}$
 9) $x = 10$ 10) $z = \frac{20}{3}$ 11) $BE = \frac{9}{2}; BC = \frac{27}{2}$ 12) 20 meters 13) A
 14) D 15) C 16) A

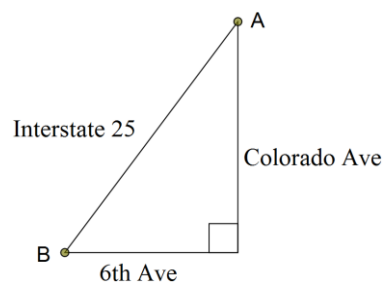
Formal Geometry
8.2 Day 1 Worksheet

Name: _____
For #1 – 20: Do NOT use the Pythagorean Theorem!

1. 
2. 
3. 
4. 
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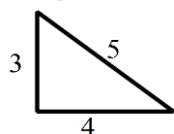
21) While following a directions on a map to find buried treasure, Max walks seven paces west, eight paces south, five paces west, two paces north, and then four paces east. How much longer did Max walk by following the directions than he would have had to if he had gone straight from his starting point to the buried treasure?

22) Garrett wants to drive from point A to point B on Interstate 25, but due to a detour, he must first drive south for 10 miles on Colorado Avenue and then drive east on 6th Avenue for 10.5 miles. How far is point A from point B?

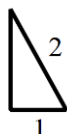


23) The Hopewell people were Native Americans whose culture flourished in the central Ohio Valley about 2000 years ago. The Hopewell people constructed earthworks using triangles, including those below.

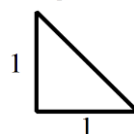
Triangle A



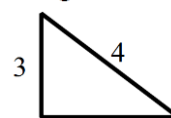
Triangle B



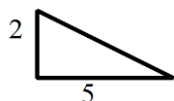
Triangle C



Triangle D



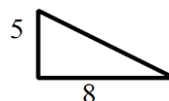
Triangle E



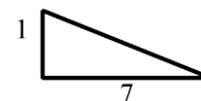
Triangle F



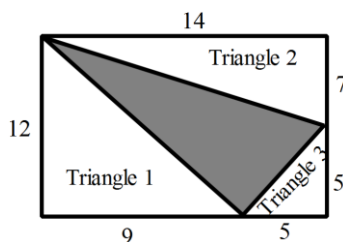
Triangle G



Triangle H



The diagram below shows the layout of some Hopewell earthworks. The centers of the Newark Octagon, the Newark Square and the Great Circle were at the corners of the shaded triangle.



The three right triangles surrounding the shaded triangle form a rectangle measuring 12 units by 14 units. Which of the Hopewell triangles is similar to $\Delta 1$, $\Delta 2$, and $\Delta 3$ in the diagram?

A. $\Delta 1 \sim \Delta A$; $\Delta 2 \sim \Delta F$; $\Delta 3 \sim \Delta C$

C. $\Delta 1 \sim \Delta D$; $\Delta 2 \sim \Delta F$; $\Delta 3 \sim \Delta C$

B. $\Delta 1 \sim \Delta A$; $\Delta 2 \sim \Delta B$; $\Delta 3 \sim \Delta C$

D. $\Delta 1 \sim \Delta D$; $\Delta 2 \sim \Delta B$; $\Delta 3 \sim \Delta C$

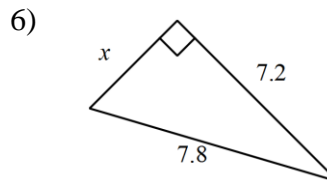
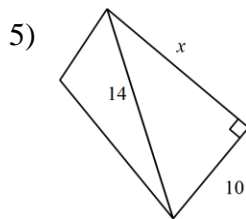
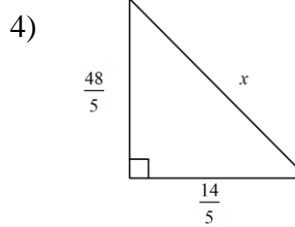
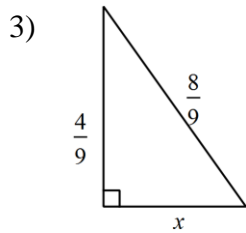
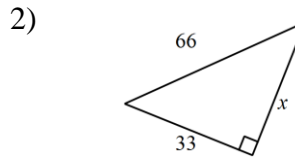
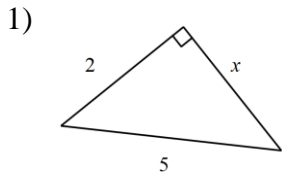
Answers:

- | | | | | | | | |
|-------|----------|---------|---------|---------|--------------------|----------------|-------|
| 1) 10 | 2) 30 | 3) 30 | 4) 12 | 5) 2.5 | 6) 14 | 7) 15 | 8) 65 |
| 9) 90 | 10) 20.5 | 11) 80 | 12) 3.5 | 13) 45 | 14) 0.4 | 15) 34 | |
| 16) 4 | 17) 39/5 | 18) 250 | 19) 10 | 20) 120 | 21) 16 extra paces | 22) 14.5 miles | 23) A |

Formal Geometry
8.2 Day 2 Worksheet

Name _____

For #1 – 6: Solve for the variable. Use exact answers only (no decimals).



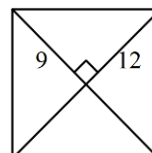
For 7 – 9: Three side lengths are given below. Determine if these sides would create a right triangle, an acute triangle, an obtuse triangle, or if they would not form a real triangle.

7) $\sqrt{20}$, 20, 18

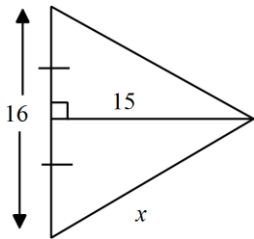
8) 7.6, 4.2, 6.4

9) 10, 12, 23

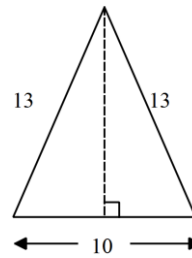
10) Find the perimeter of the square shown.



11) Find x and the perimeter of the figure.



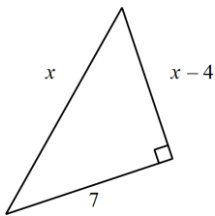
12) Find the area of the figure shown.



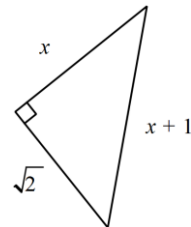
13) The sides of a triangle have lengths x , $x + 5$, and 25. If the length of the longest side is 25, then find the value of x that would make the triangle a right triangle.

For #14 – 15, find x .

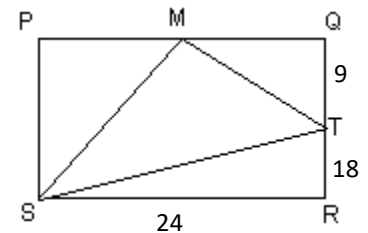
14)



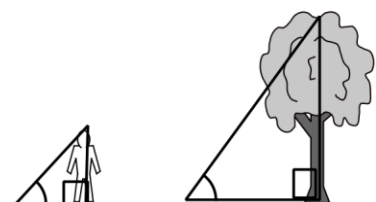
15)



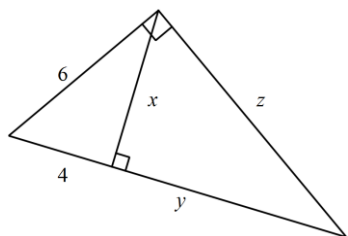
16) M is the midpoint of PQ in rectangle PQRS. Find the perimeter of $\triangle MST$. Exact answers only.



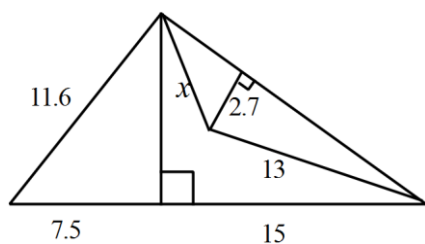
17) A tree has a height of 24 feet, and a shadow that is 15 feet long. At the exact same time of day, when Andy stands next to the tree, his shadow is 5 feet long. Find the distance from the top of Andy's head to the end of his shadow, rounded to the nearest hundredth of a foot.



18) Find the value of x , y , and z . Exact answers only.



19) Find the value of x , rounded to the nearest tenth.



20) Solve for x : $20x^2 + 2x - 4 = 5x^2 + 15x + 2$

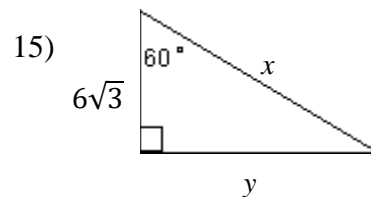
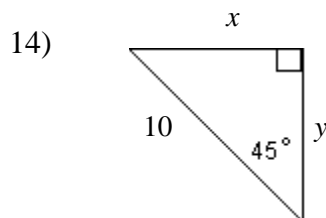
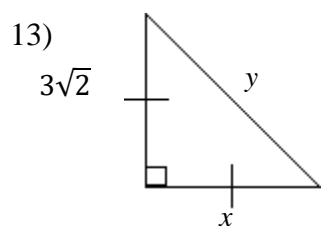
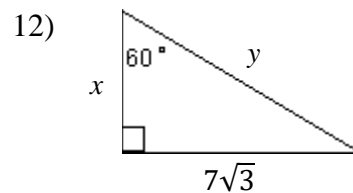
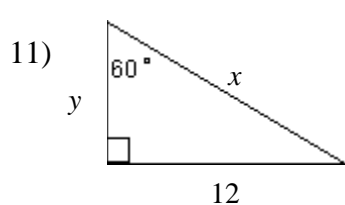
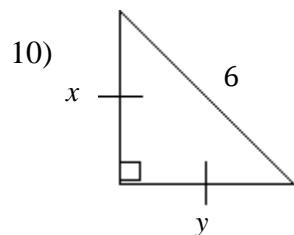
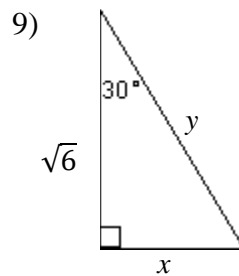
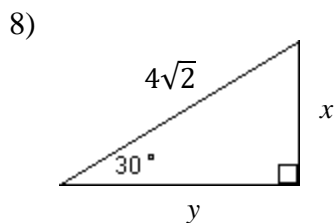
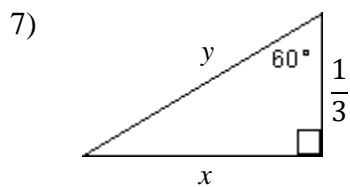
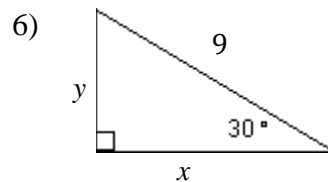
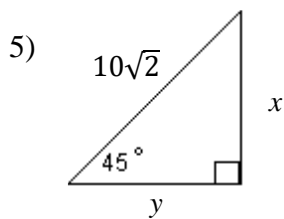
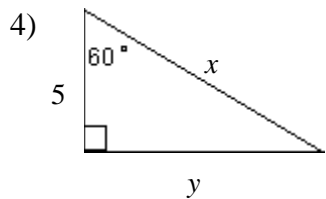
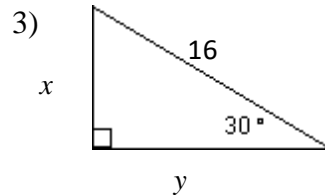
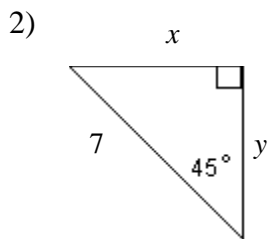
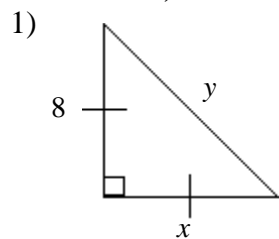
Answers:

- 1) $\sqrt{21}$ 2) $33\sqrt{3}$ 3) $\frac{4\sqrt{3}}{9}$ 4) 10 5) $4\sqrt{6}$ 6) 3 7) obtuse
 8) acute 9) not a real triangle 10) 60 units 11) $x = 17$; per = 50 units 12) $60u^2$ 13) 15
 14) $\frac{65}{8}$ 15) $\frac{1}{2}$ 16) $45 + 3\sqrt{97}$ 17) 9.43 ft 18) $x = 2\sqrt{5}$; $y = 5$; $z = 3\sqrt{5}$
 19) 5.4 20) $x = \frac{6}{5}$; $-\frac{1}{3}$

Formal Geometry
8.3 Worksheet

Name _____

For #1 – 15, find the variable(s).

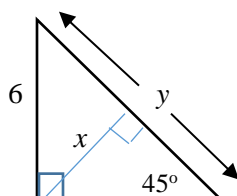


16) An equilateral triangle has one side of length 14. Find the length of the height of the equilateral triangle.

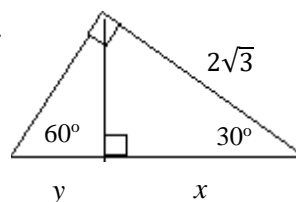
17) A square has area equal to 25 cm^2 . Find the length of the diagonal.

18) An equilateral triangle has a height of $20\sqrt{3}$. Find the perimeter of the triangle.

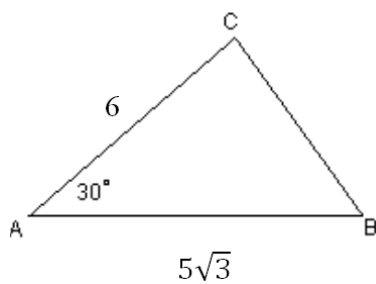
19) Find x and y .



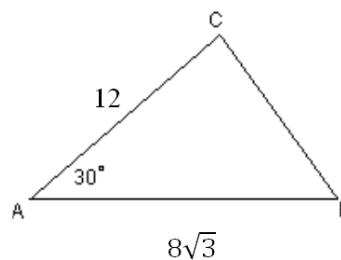
20) Find x and y .



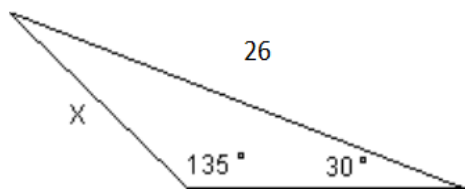
21) Find BC. ($\angle C$ is not a right \angle .)



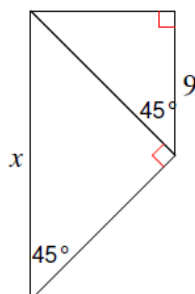
22) Find BC. ($\angle C$ is not a right \angle .)



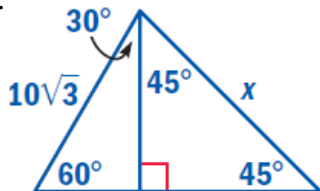
23) Find x .



24) Find x .



25) Find x .



26) The perimeter of a square is 54 cm . Find the length of a diagonal, rounding to the nearest tenth.

A. 10.4 cm C. 19.1 cm

B. 13.5 cm D. 22.4 cm

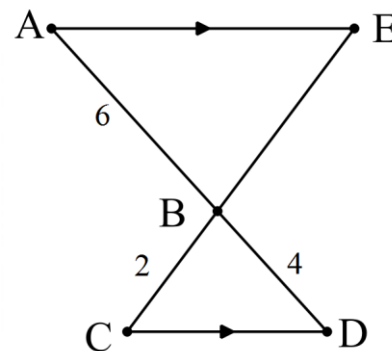
27) Fill in the blanks to make the statement true: If two triangles are similar, then corresponding angles are _____ and corresponding sides are _____.

For #28 – 30, use the triangles shown.

28) Are the triangles similar? If so, by what theorem or postulate?

29) Write a similarity statement, or write “none” if they are not similar.

30) Find the scale factor of the triangles (large to small), or write “none” if they are not similar.



Answers:

- | | | | | |
|---|--|--|------------------------------------|------------------------------|
| 1) $x = 8, y = 8\sqrt{2}$ | 2) $x = y = \frac{7\sqrt{2}}{2}$ | 3) $x = 8; y = 8\sqrt{3}$ | 4) $x = 10; y = 5\sqrt{3}$ | 5) $x = y = 10$ |
| 6) $x = \frac{9\sqrt{3}}{2}; y = \frac{9}{2}$ | 7) $x = \frac{\sqrt{3}}{3}; y = \frac{2}{3}$ | 8) $x = 2\sqrt{2}; y = 2\sqrt{6}$ | 9) $x = \sqrt{2}; y = 2\sqrt{2}$ | 10) $x = y = 3\sqrt{2}$ |
| 11) $x = 8\sqrt{3}; y = 4\sqrt{3}$ | 12) $x = 7; y = 14$ | 13) $x = 3\sqrt{2}; y = 6$ | 14) $x = y = 5\sqrt{2}$ | 15) $x = 12\sqrt{3}; y = 18$ |
| 16) $7\sqrt{3}$ | 17) $5\sqrt{2} \text{ cm}$ | 18) 120 | 19) $x = 3\sqrt{2}; y = 6\sqrt{2}$ | 20) $x = 3; y = 1$ |
| 22) $4\sqrt{3}$ | 23) $13\sqrt{2}$ | 24) 18 | 25) $15\sqrt{2}$ | 26) C |
| 27) congruent, proportional | 28) yes by AA~ | 29) $\triangle ABE \sim \triangle DBC$ | 30) $\frac{3}{2}$ | |

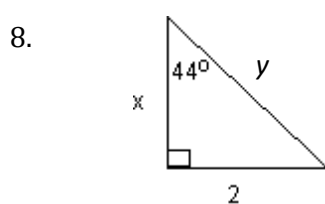
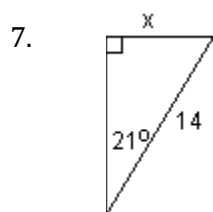
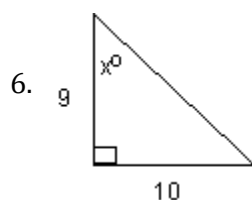
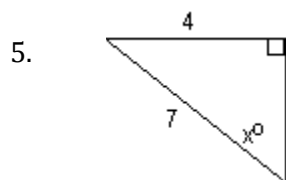
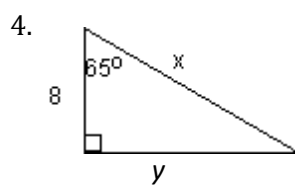
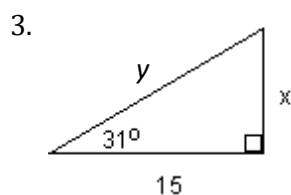
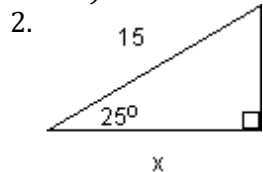
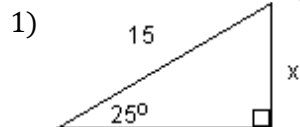
Formal Geometry
Right Triangle Trig Worksheet

Name: _____

Hints for solving for a variable:

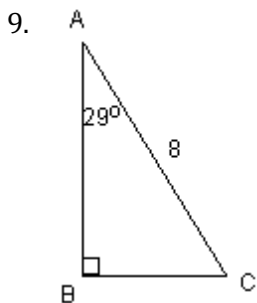
- 1) Decide what trig function matches your picture.
- 2) Make an equation. Trig function angle = ratio
- 3) Solve for the variable.

Solve for the variables (round to 2 decimal places, if needed.)

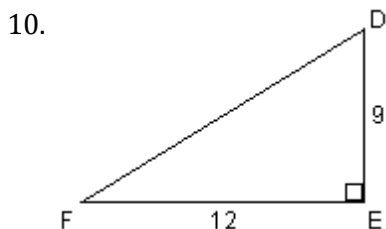


Solving a triangle means to find all of its parts. (3 sides, 3 angles)

Solve the following triangles. Round to 2 decimal places, if needed.



$m\angle A =$
$m\angle B =$
$m\angle C =$
$AB =$
$BC =$
$AC =$



$m\angle D =$
$m\angle E =$
$m\angle F =$
$DF =$
$DE =$
$EF =$

Summary of Methods

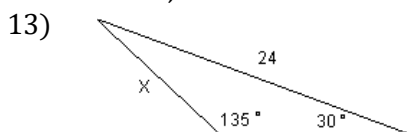
If I know...	I should use...	to find the...
2 sides	the Pythag. Thm.	3 rd side
2 sides	inverse trig function	related angle
A side and an angle	trig function	related side
2 angles	sum of 180 degrees	3 rd angle

For #11-12 use special right triangles. (45-45-90 or 30-60-90). Simplify radical answers.

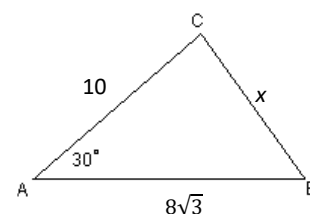
11. Find $\sin 30^\circ$, $\sin 60^\circ$, $\tan 30^\circ$.

12. Find $\tan 45^\circ$, $\cos 45^\circ$, $\sin 45^\circ$

For #13 – 14, find the value of x as an exact answer (no decimals.) Use special right triangles!

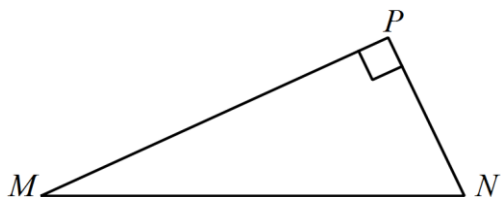


14) note: $\angle C$ is not a right \angle



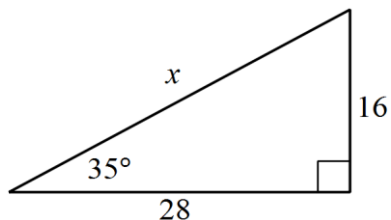
15. Which of the following has the same value as $\sin M$?

- A. $\sin N$
- B. $\cos N$
- C. $\tan M$
- D. $\cos M$



16. Based on the figure below, choose all correct ways of solving for x .

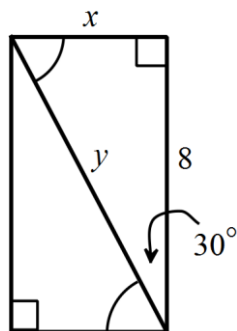
I.	$x = \frac{16}{\sin 35^\circ}$
II.	$x = \frac{28}{\sin 55^\circ}$
III.	$x = \frac{28}{\cos 35^\circ}$
IV.	$x = \sqrt{28^2 + 16^2}$



- A. I, IV
- B. II, III
- C. I, III, IV
- D. I, II, III, IV

17. Find the values of x and y .

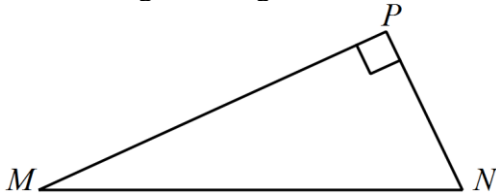
- A. $x = 4, y = 4\sqrt{3}$
- B. $x = 8\sqrt{3}, y = 16\sqrt{3}$
- C. $x = \frac{16\sqrt{3}}{3}, y = \frac{8\sqrt{3}}{3}$
- D. $x = \frac{8\sqrt{3}}{3}, y = \frac{16\sqrt{3}}{3}$



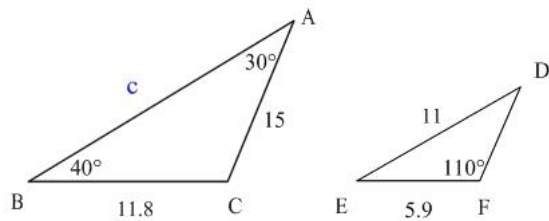
18. A 12 *foot* ladder is leaning up against the side of a house. The bottom of the ladder is placed 10 *feet* from the side of the house. What is the measure of the angle formed by the ground and the ladder?
- A. 33.6° C. 50.2°
 B. 39.8° D. 56.4°
19. A person is standing at ground level with the base of the Empire State Building in New York City. The angle formed by the ground and a line segment from his position to the top of the building is 48.4° . The height of the Empire State Building is 1472 feet. Find the distance that he is standing from the base of the Empire State Building to the nearest foot.
- A. 8 *feet* C. 1968 *feet*
 B. 1307 *feet* D. 2217 *feet*

20. In a right triangle, one angle measures x° , where $\sin x^\circ = \frac{4}{5}$, what is $\cos(90 - x^\circ)$?

21. In a right triangle, $\sin N = 0.6$. what is $\cos M$?



22. Given that $\triangle ABC \sim \triangle DEF$, find c .



Trig Worksheet ANSWERS

- 1) 6.34 2) 13.59 3) $x = 9.01$; $y = 17.50$ 4) $x = 18.93$; $y = 17.16$ 5) 34.85° 6) 48.01° 7) 5.02
 8) $x = 2.07$; $y = 2.88$ 9) 29° , 90° , 61° , 7.00, 3.88, 8 10) 53.13° , 90° , 36.87° , 15, 9, 12
 11) $\frac{1}{2}, \frac{\sqrt{3}}{2}, \frac{\sqrt{3}}{3}$ 12) $1, \frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}$ 13) $12\sqrt{2}$ 14) $2\sqrt{13}$
 15) B 16) D 17) D 18) A 19) B
 20) $\frac{4}{5}$, Hint: draw the triangle and find all sides. Notice that the acute angles are complementary. 4 is the missing side.
 21) 0.6 22) 22