

Exploring Triangles

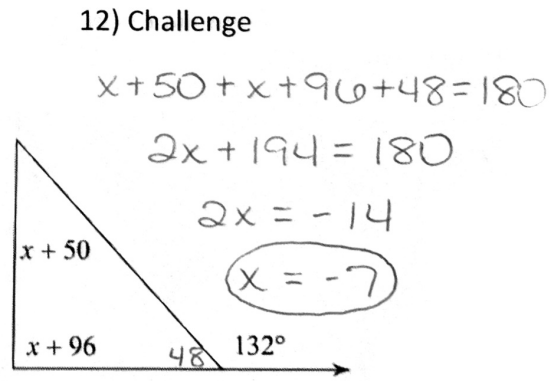
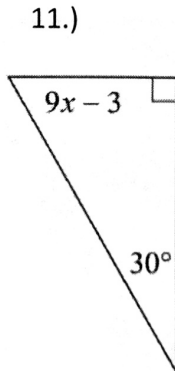
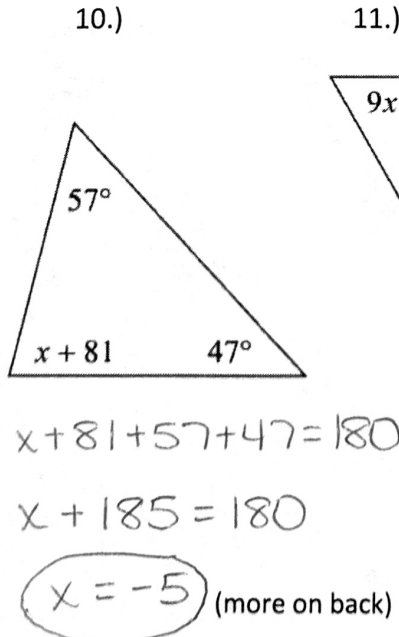
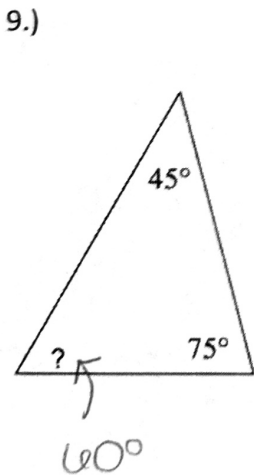
Homework A

Directions: Read each description and determine if a triangle is possible or not under the given conditions. Write YES or NO next to each description. If a triangle is possible, classify the triangle (at least one way) using the key provided.

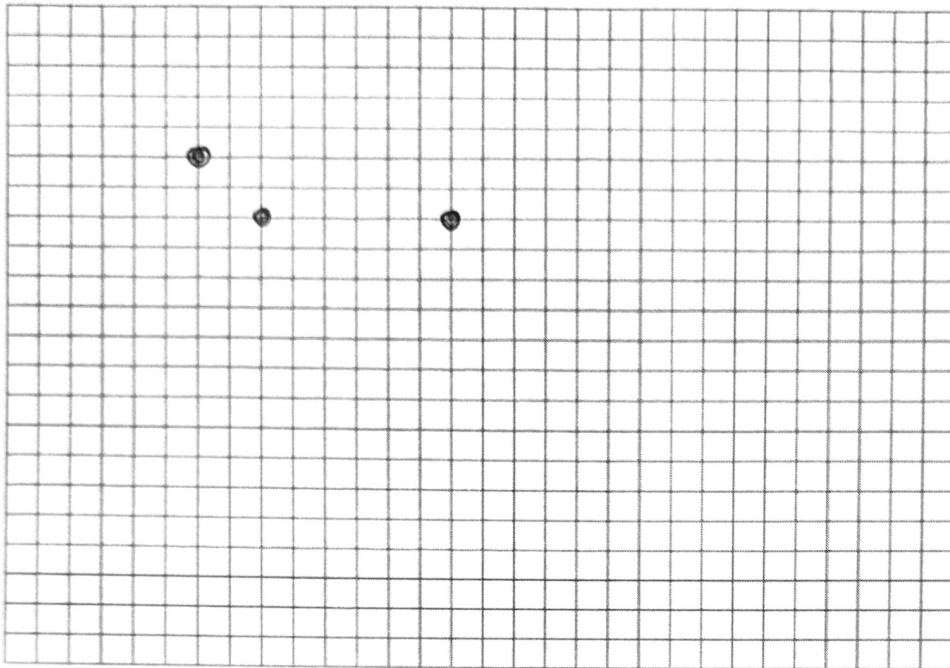
| | | |
|-------------------------|------------|-----------------|
| Triangle Classification | A - Acute | S - Scalene |
| Key | O - Obtuse | I - Isosceles |
| | R - Right | E - Equilateral |

| <u>Description</u> | <u>YES or NO</u> | <u>Triangle Classification(s)</u> |
|--------------------------------------|------------------|-----------------------------------|
| 1.) Side Lengths: 3 cm, 4 cm, 5 cm | <u>Yes</u> | <u>R S</u> |
| 2.) Angles: 30°, 28°, 122° | <u>Yes</u> | <u>O S</u> |
| 3.) Side Lengths: 18 in, 11 in, 5 in | <u>No</u> | _____ |
| 4.) Angles: 55°, 55°, 65° | <u>No</u> | _____ |
| 5.) Side Lengths: 5 ft, 5 ft, 5 ft | <u>Yes</u> | <u>A E</u> |
| 6.) Angles: 30°, 100°, 60° | <u>No</u> | _____ |
| 7.) Side Lengths: 6 m, 12 m, 18 m | <u>No</u> | _____ |
| 8.) Angles: 45°, 90°, 45° | <u>Yes</u> | <u>R I</u> |

Directions: Write an equation and solve for each variable. Show your work!



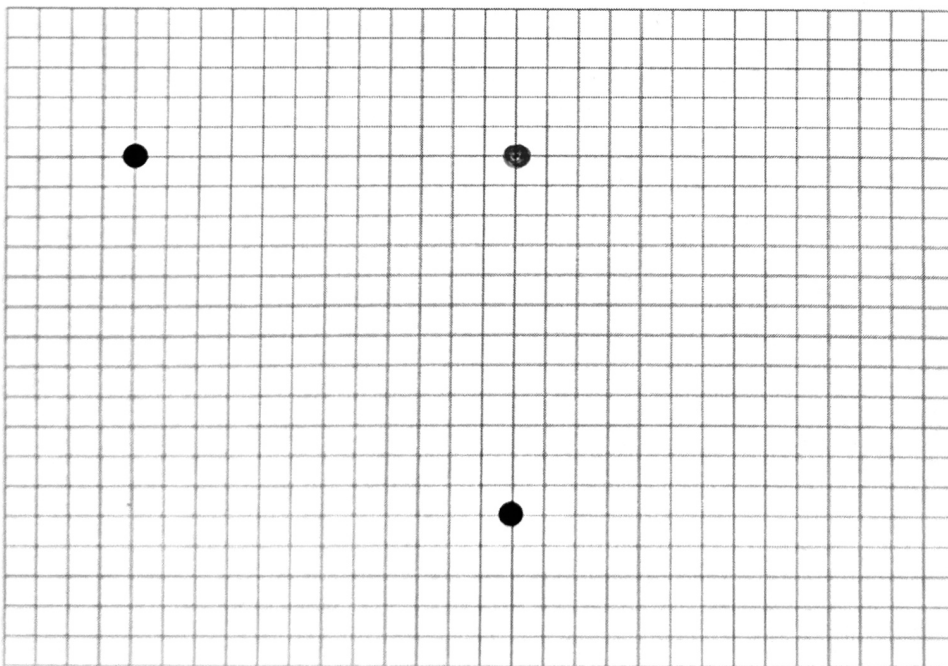
13.) Create an obtuse, scalene triangle, placing each vertex on an intersection of the grid lines.



Example

Answers
will vary.

14.) Create a right, isosceles triangle, placing the final vertex on an intersection of the grid lines.
(You must use the two vertices already plotted.)



Example

Answers
will vary.

Exploring Triangles

Homework B

Directions: Read each description and determine if a triangle is possible or not under the given conditions. Write YES or NO next to each description.

| Description | YES or NO |
|-------------------------------------|------------|
| 1.) Side Lengths: 3 cm, 4 cm, 5 cm | <u>Yes</u> |
| 2.) Angles: 30°, 28°, 122° | <u>Yes</u> |
| 3.) Side Lengths: 18 in, 11 in, 5in | <u>No</u> |
| 4.) Angles: 55°, 55°, 65° | <u>No</u> |
| 5.) Side Lengths: 5 ft, 5 ft, 5 ft | <u>Yes</u> |
| 6.) Angles: 30°, 100°, 60° | <u>No</u> |
| 7.) Side Lengths: 6 m, 12 m, 18 m | <u>No</u> |
| 8.) Angles: 45°, 90°, 45° | <u>Yes</u> |

Remember...

Triangle Inequality Theorem:

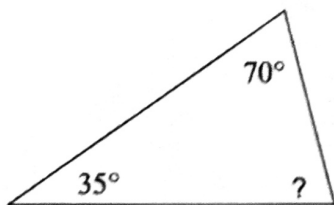
The two shorter sides of a triangle must add up to MORE than the third side.

Triangle Sum Theorem:

The interior angles of any triangle must add up to exactly 180 degrees.

Directions: Write an equation and solve for each variable. Show your work!

9.)

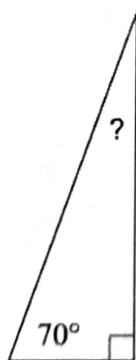


$$35 + 70 + x = 180$$

$$105 + x = 180$$

$$x = 75^\circ$$

10.)

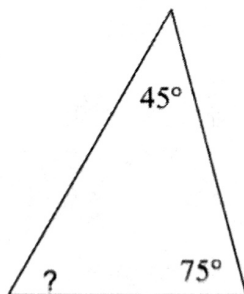


$$70 + 90 + x = 180$$

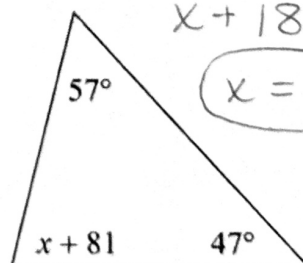
$$160 + x = 180$$

$$x = 20^\circ \text{ (more on back)}$$

11.)



12) Challenge



$$x + 81 + 57 + 47 = 180$$

$$x + 185 = 180$$

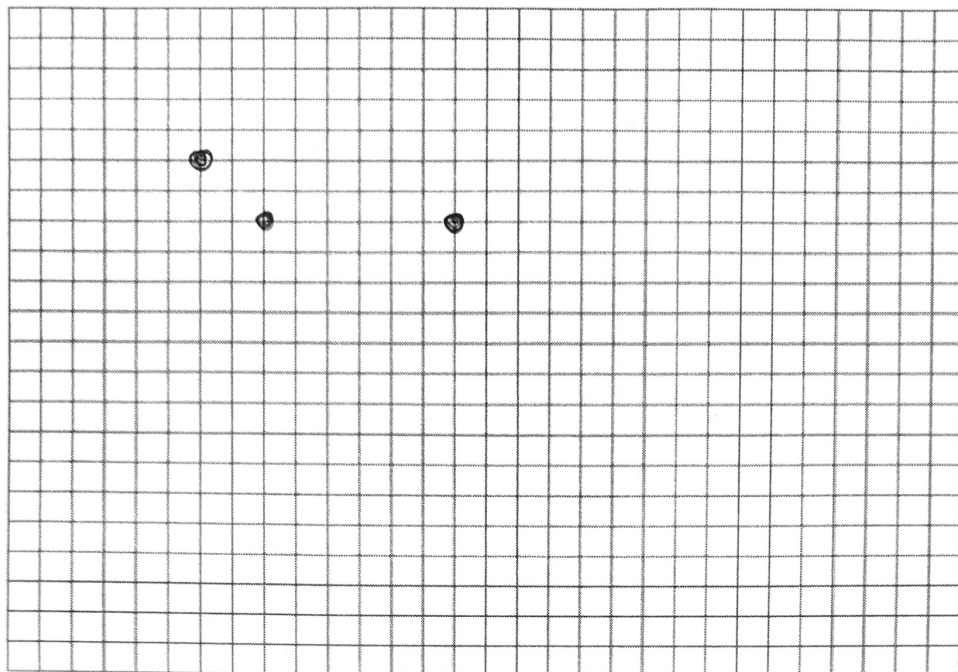
$$x = -5^\circ$$

$$45 + 75 + x = 180$$

$$120 + x = 180$$

$$x = 60^\circ$$

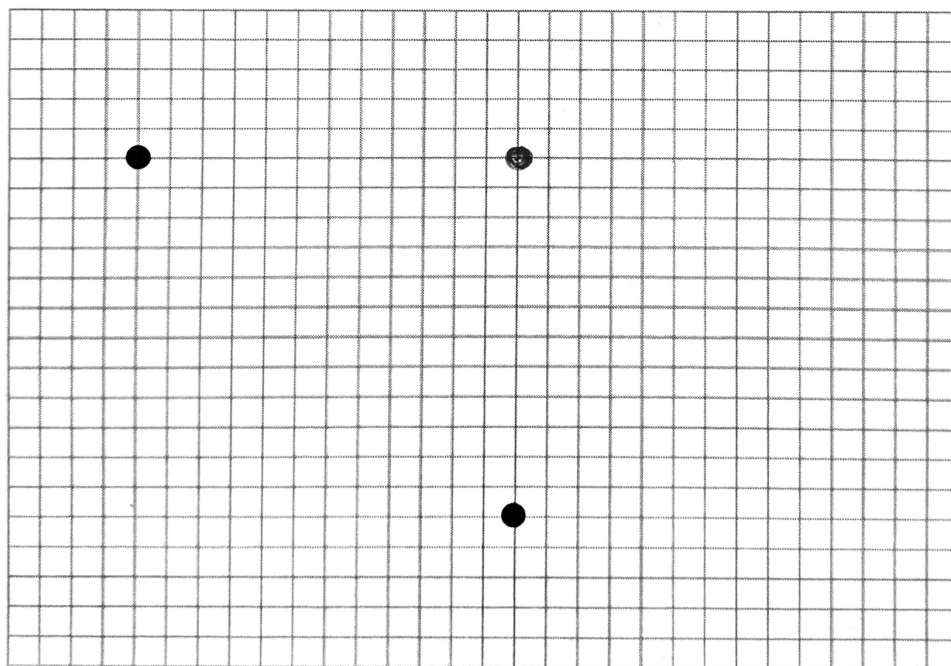
13.) Create an obtuse, scalene triangle, placing each vertex on an intersection of the grid lines.



Example

Answers will vary.

14.) Create a right, isosceles triangle, placing the final vertex on an intersection of the grid lines. (You must use the two vertices already plotted.)



Example

Answers will vary.