

Honors Geometry  
Worksheet 9.3

Name \_\_\_\_\_  
Date \_\_\_\_\_

Determine if the following sets of numbers can represent the length of the sides of a triangle. If they can, classify the triangle as acute, obtuse, or right. Show your work to justify your answer.

1. 30, 31, 10

2. 12, 20, 16

3. 4, 11, 12

4. 4, 5, 7

5. 10, 8, 4

6. 7, 11, 4

7.  $\sqrt{57}$ , 8, 12

8. 40, 41, 9

9.  $\sqrt{6}$ ,  $\sqrt{11}$ , 4

10. 2, 6, 5

11. 21, 24, 13

12. 25, 7, 24

**In Exercises 13-18, find the possible values of  $x$ .**

13.  $\triangle ABC$  is a right triangle;  $AB = x$ ,  $BC = x + 1$ ,  $AC = x + 9$ .

14.  $\triangle DEF$  is a right triangle;  $DE = 12$ ,  $EF = x - 1$ ,  $DF = x + 1$ .

15.  $\triangle GHI$  is a right triangle;  $GH = 5$ ,  $HI = x + 4$ ,  $GI = 2x - 3$ .

16.  $\triangle JKL$  is a right triangle;  $JK = 3x - 6$ ,  $KL = 2x + 11$ ,  $JL = 20$ .

17.  $\triangle MNO$  is an acute triangle;  $MN = x - 1$ ,  $NO = x + 1$ ,  $MO = 8$ .

18.  $\triangle PQR$  is an obtuse triangle;  $PQ = x$ ,  $QR = x + 1$ ,  $PR = 5$ .

# WS 61b

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Determine if the following sets of numbers can represent the length of the sides of a triangle. If they can, classify the triangle as acute, obtuse, or right. Show your work to justify your answer.

1. 30, 31, 10

$$c^2 \quad a^2 + b^2$$

$$961 < 30^2 + 10^2$$

$$1000$$

ACUTE

2. 12, 20, 16

$$c^2 \quad a^2 + b^2$$

$$400 = 12^2 + 16^2$$

$$400 = 400$$

RIGHT

3. 4, 11, 12

$$c^2 \quad a^2 + b^2$$

$$144 > 4^2 + 11^2$$

$$137$$

OBTUSE

4. 4, 5, 7

$$c^2 \quad a^2 + b^2$$

$$49 > 4^2 + 5^2$$

$$41$$

OBTUSE

5. 10, 8, 4

$$c^2 \quad a^2 + b^2$$

$$100 > 10^2 + 8^2$$

$$80$$

OBTUSE

6. 7, 11, 4

CANNOT

7.  $\sqrt{57}$ , 8, 12

$$c^2 \quad a^2 + b^2$$

$$144 > 57 + 64$$

$$121$$

OBTUSE

8. 40, 41, 9

$$c^2 \quad a^2 + b^2$$

$$1681 = 40^2 + 9^2$$

$$1681 = 1681$$

RIGHT

9.  $\sqrt{6}$ ,  $\sqrt{11}$ , 4

$$c^2 \quad a^2 + b^2$$

$$16 < 6 + 11$$

$$17$$

ACUTE

10. 2, 6, 5

$$c^2 \quad a^2 + b^2$$

$$36 > 4 + 25$$

$$29$$

OBTUSE

11. 21, 24, 13

$$c^2 \quad a^2 + b^2$$

$$576 < 21^2 + 13^2$$

$$610$$

ACUTE

12. 25, 7, 24

$$c^2 \quad a^2 + b^2$$

$$625 = 25^2 + 24^2$$

$$625 = 625$$

RIGHT

In Exercises 13-18, find the possible values of  $x$ .

13.  $\triangle ABC$  is a right triangle;  $AB = x$ ,  $BC = x + 1$ ,  $AC = x + 9$ . <sup>20</sup>
14.  $\triangle DEF$  is a right triangle;  $DE = 12$ ,  $EF = x - 1$ ,  $DF = x + 1$ . <sup>36 or  $\sqrt{71}$</sup>
15.  $\triangle GHI$  is a right triangle;  $GH = 5$ ,  $HI = x + 4$ ,  $GI = 2x - 3$ .
16.  $\triangle JKL$  is a right triangle;  $JK = 3x - 6$ ,  $KL = 2x + 11$ ,  $JL = 20$ .
17.  $\triangle MNO$  is an acute triangle;  $MN = x - 1$ ,  $NO = x + 1$ ,  $MO = 8$ .
18.  $\triangle PQR$  is an obtuse triangle;  $PQ = x$ ,  $QR = x + 1$ ,  $PR = 5$ .