

# Classifying Triangles

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 24

## Q Quick Review

A **triangle** is a shape with 3 sides and 3 angles. We can sort triangles by their angles. A **right triangle** has exactly one  $90^\circ$  angle. An **acute triangle** has all three angles less than  $90^\circ$ . An **obtuse triangle** has one angle that is larger than  $90^\circ$ . We can also sort triangles by their sides. An **equilateral triangle** has all 3 sides equal. An **isosceles triangle** has exactly 2 sides equal. A **scalene triangle** has no equal sides — all 3 sides are different lengths.

◇ **Example:** A triangle has one angle that measures  $110^\circ$ . The other two angles are smaller. How would you classify this triangle by its angles?

⇒ Look at the biggest angle: it measures  $110^\circ$ . Compare that to  $90^\circ$ . Since  $110^\circ$  is larger than  $90^\circ$ , the triangle has one obtuse angle. A triangle with an angle bigger than  $90^\circ$  is called an obtuse triangle, no matter what the other angles are.

**Answer:** obtuse triangle

## PRACTICE

Classify each triangle by its angles or by its sides as described.

- |  |       |   |       |
|--|-------|---|-------|
| 1. A triangle with one $90^\circ$ angle                  | _____ | 12. A triangle with angles $70^\circ, 60^\circ, 50^\circ$         | _____ |
| 2. A triangle with all 3 sides equal                     | _____ | 13. A triangle with sides 9, 9, 4                                 | _____ |
| 3. A triangle with exactly 2 equal sides                 | _____ | 14. A triangle with one angle of $90^\circ$ and two of $45^\circ$ | _____ |
| 4. A triangle with no equal sides                        | _____ | 15. A triangle with sides 4, 8, 11                                | _____ |
| 5. A triangle with one angle of $120^\circ$              | _____ | 16. A triangle with angles $80^\circ, 80^\circ, 20^\circ$         | _____ |
| 6. A triangle with angles $60^\circ, 60^\circ, 60^\circ$ | _____ | 17. A triangle with one angle of $150^\circ$                      | _____ |
| 7. A triangle with sides 5, 5, 8                         | _____ | 18. A triangle with sides 6, 6, 6                                 | _____ |
| 8. A triangle with sides 3, 6, 7                         | _____ | 19. A triangle with sides 10, 10, 14                              | _____ |
| 9. A triangle with angles $90^\circ, 45^\circ, 45^\circ$ | _____ | 20. A triangle with angles $90^\circ, 60^\circ, 30^\circ$         | _____ |
| 10. A triangle with sides 7, 7, 7                        | _____ |   |       |
| 11. A triangle with one angle of $100^\circ$             | _____ |   |       |

## ◆ Word Problems

21. Emma cuts a triangle out of paper for a craft. She measures its three sides and finds they are 5 cm, 5 cm, and 5 cm. What kind of triangle did Emma cut? \_\_\_\_\_
22. A road sign is shaped like a triangle. One of its angles measures  $90^\circ$ . What kind of triangle is the sign, classified by its angles? \_\_\_\_\_
23. Carlos draws a triangle where the three angles measure  $55^\circ, 65^\circ,$  and  $60^\circ$ . How should Carlos classify his triangle by its angles? \_\_\_\_\_
24. Ava measures the sides of a triangular flag and gets 12 in, 9 in, and 15 in. Classified by its sides, what kind of triangle is the flag? \_\_\_\_\_



## Answer Keys

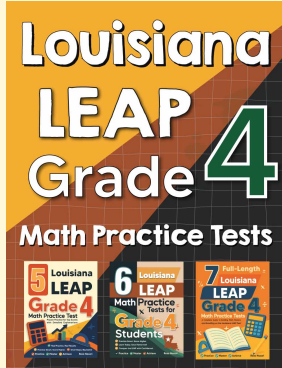
- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. right triangle</li> <li>2. equilateral triangle</li> <li>3. isosceles triangle</li> <li>4. scalene triangle</li> <li>5. obtuse triangle</li> <li>6. acute triangle</li> <li>7. isosceles triangle</li> <li>8. scalene triangle</li> <li>9. right triangle</li> <li>10. equilateral triangle</li> <li>11. obtuse triangle</li> <li>12. acute triangle</li> </ol> | <ol style="list-style-type: none"> <li>13. isosceles triangle</li> <li>14. right triangle</li> <li>15. scalene triangle</li> <li>16. acute triangle</li> <li>17. obtuse triangle</li> <li>18. equilateral triangle</li> <li>19. isosceles triangle</li> <li>20. right triangle</li> <li>21. an equilateral triangle</li> <li>22. a right triangle</li> <li>23. an acute triangle</li> <li>24. a scalene triangle</li> </ol> |
|---|---|

### Step-by-Step Explanations

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Exactly one <math>90^\circ</math> angle makes it a right triangle.</li> <li>2. All three sides equal means the triangle is equilateral.</li> <li>3. Exactly two equal sides makes the triangle isosceles.</li> <li>4. When all three sides are different, the triangle is scalene.</li> <li>5. An angle of <math>120^\circ</math> is larger than <math>90^\circ</math>, so the triangle is obtuse.</li> <li>6. All three angles are less than <math>90^\circ</math>, so this is an acute triangle.</li> <li>7. Two sides are equal (5 and 5), so the triangle is isosceles.</li> <li>8. All three sides are different lengths, so the triangle is scalene.</li> <li>9. It has a <math>90^\circ</math> angle, so it is a right triangle.</li> <li>10. All three sides are the same length, so it is equilateral.</li> <li>11. <math>100^\circ</math> is greater than <math>90^\circ</math>, so the triangle is obtuse.</li> <li>12. Every angle is below <math>90^\circ</math>, so the triangle is acute.</li> </ol> | <ol style="list-style-type: none"> <li>13. Two sides match (9 and 9), so it is an isosceles triangle.</li> <li>14. The <math>90^\circ</math> angle tells us it is a right triangle.</li> <li>15. No two sides are equal, so the triangle is scalene.</li> <li>16. All three angles are under <math>90^\circ</math>, so it is an acute triangle.</li> <li>17. <math>150^\circ</math> is far bigger than <math>90^\circ</math>, so the triangle is obtuse.</li> <li>18. All three sides are equal, so the triangle is equilateral.</li> <li>19. Two sides are equal (10 and 10), so it is isosceles.</li> <li>20. One angle is exactly <math>90^\circ</math>, so this is a right triangle.</li> <li>21. All three sides are equal at 5 cm, so the triangle is equilateral.</li> <li>22. A triangle with one <math>90^\circ</math> angle is a right triangle.</li> <li>23. Each angle (<math>55^\circ</math>, <math>65^\circ</math>, and <math>60^\circ</math>) is less than <math>90^\circ</math>, so the triangle is acute.</li> <li>24. The three sides are all different lengths, so the triangle is scalene.</li> </ol> |
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