

Guided Practice

Draw one shape that meets the given conditions. Use a ruler and a protractor.

1. a parallelogram (a quadrilateral with two sets of parallel sides) with no right angles

2. a pentagon with exactly three of its sides measuring 2 cm

3. a triangle with side lengths 3 cm, 3 cm, and 5 cm

4. an isosceles triangle (a triangle with at least two sides the same length) with one angle that measures 100°

Tell whether *exactly one triangle*, *more than one triangle*, or *no triangle* can be constructed given the side lengths or angle measures.

5. side lengths: 3 cm, 6 cm, 9 cm

6. side lengths: 2 in., 5 in., 5 in.

7. angle measures: 50° , 50° , and 80°

8. angle measures: 20° , 30° , and 50°

 Think-Pair-Share

MP3 9. Can you draw a triangle with more than one right angle? Explain.

Independent Practice

Draw one shape that meets the given conditions. Use a ruler and a protractor.

1. a trapezoid with two pairs of equal angles
2. a pentagon with two right angles
3. a triangle with one right angle and two equal sides of 2 cm each
4. a quadrilateral with sides 3 cm, 4 cm, 5 cm, and 6 cm
5. a triangle with angle measures 85° , 35° , and 60°
6. a rhombus that is not a square with sides that each measure 3 cm

Independent Practice

Tell whether *exactly one triangle*, *more than one triangle*, or *no triangle* can be constructed given the side lengths or angle measures.

7. angle measures: 32° , 48° , and 100°

8. side lengths: 12 cm, 8 cm, 3 cm

9. side lengths: 13 in., 9 in., 8 in.

10. angle measures: 60° , 60° , and 100°

For exercises 11–15, circle each correct answer. Use a ruler and a protractor if necessary.

11. Which figure has all sides equal in length and all angles equal in measure?

a.



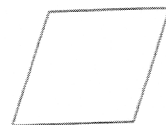
b.



c.



d.

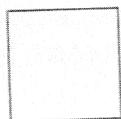


12. Which figure has two obtuse angles?

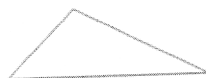
a.



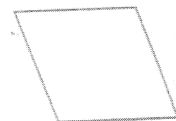
b.



c.



d.



13. For which of the following conditions can you draw *exactly one triangle*?

- a. Each side of the triangle is 6.25 feet long.
- b. One angle of the triangle has a measure of 45° .
- c. The triangle has angle measures of 70° , 80° , and 30° .
- d. For $n = 8$, the sides of the triangle measure n , $n + 1$, and $n + 2$ units.

14. For which of the following conditions is *no triangle* possible?

- a. The sides of the triangle measure 3 ft, 4 ft, and 5 ft.
- b. The triangle has angles that measure 40° , 80° , 40° .
- c. The triangle has two obtuse angles.
- d. For any value of n , the sides of the triangle measure n , $n + 1$, and $n + 2$ units.


Independent Practice

15. For which of the following conditions can *more than one triangle* be drawn?
- The triangle has angles that measure 40° , 90° , and 40° .
 - The triangle has two equal angles.
 - The triangle has three equal angles.
 - The triangle has no equal angles.
- MP3 16. Julio claims that he can draw a triangle that has three acute angles. Geulia says that she can draw a triangle that has no acute angles. Is either student correct, or are both students correct? Explain.
- MP4 17. Freida says that she can draw a triangle that has three angles with equal measure, but the sides are not of equal length. Is Freida correct? Explain. Use a drawing in your explanation.

Solve the problem.

- MP2 18. An isosceles triangle has two angles with equal measure, 25° . Todd says that the third angle must have a measure of 130° . Is Todd correct?

Answer _____

 Justify your answer.