

Geometry and the Coordinate Plane: math practice, Grade 5 – download the PDF

21 problems graded by difficulty (★ easy, ★★ medium, ★★★ hard). Try first, without looking at the solutions!

1 Axes and origin



Answer the questions about the coordinate plane.

- Which axis is horizontal? Which axis is vertical?
- What are the coordinates of the origin?
- Which number of an ordered pair comes first, the move right or the move up?

2 Same numbers, different points

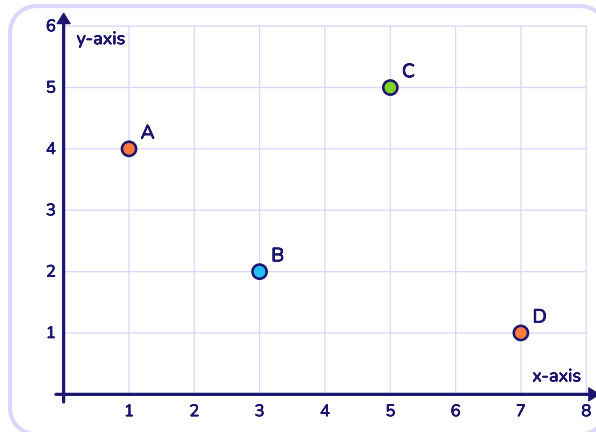


Describe how to reach the points $(6, 2)$ and $(2, 6)$ starting at the origin. Are they the same point?

3 Reading ordered pairs



Write the ordered pair for each point.



4 True or false?



Say whether each sentence is true or false. Explain your answer.

- A point on the x-axis has a second coordinate of 0.
- The point $(0, 5)$ is on the x-axis.
- The first number of an ordered pair tells how far to go up.
- The origin is where the two axes cross.

5 Name that quadrilateral



Name each quadrilateral.

- It has 2 pairs of parallel sides, no right angles, and its sides are not all equal.
- It has 4 right angles, and its neighboring sides have different lengths.
- It has exactly one pair of parallel sides.

6**Triangles by their sides**

Name each triangle by its sides.

- a. 6 cm, 6 cm, 6 cm
- b. 7 in, 7 in, 4 in
- c. 5 cm, 6 cm, 9 cm

7**Parallel or perpendicular?**

Say whether each pair of real-life lines is parallel or perpendicular.

- a. The two rails of a straight train track.
- b. A wall and the floor at the corner of a room.
- c. The two long edges of a ruler.
- d. The hands of a clock at 3:00.

8**Distances on the grid**

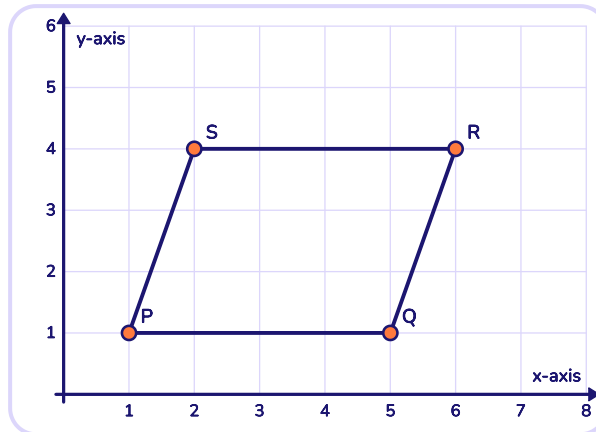
On a coordinate plane, plot $P(2, 1)$, $Q(2, 6)$ and $R(7, 1)$.

- a. How long is the segment PQ? Is it horizontal or vertical?
- b. How long is the segment PR?
- c. Are PQ and PR parallel or perpendicular?

9

Which quadrilateral is PQRS?

Look at the figure.



- Write the coordinates of P, Q, R and S.
- How long are the horizontal sides?
- Is PQRS a parallelogram? Is it a rectangle? Explain.

10

The bike courier

A courier rides from the bakery at $(1, 2)$ to the school at $(1, 8)$, and then to the library at $(5, 8)$. Each grid unit is half a mile.

- How many units does the courier ride on each part?
- How many miles is the whole ride?
- Are the two parts parallel or perpendicular?

11 Always, sometimes or never?



Write *always*, *sometimes* or *never*.

- a. A square is a rectangle.
- b. A rectangle is a square.
- c. A rhombus has 4 right angles.
- d. A triangle has parallel sides.

12 Triangles by their angles



Name each triangle by its angles.

- a. 40° , 60° , 80°
- b. 90° , 35° , 55°
- c. 110° , 30° , 40°

13 Perimeters from attributes



- a. A rhombus has a perimeter of 30 cm. How long is each side?
- b. A rectangle has a perimeter of 26 in and a length of 8 in. What is its width?

14 Sorting in a Venn diagram



Circle A is “at least one pair of parallel sides”. Circle B is “at least one right angle”. Place each quadrilateral in A only, B only, both, or neither.

- a. Square
- b. Rhombus with no right angle
- c. Right trapezoid (a trapezoid with a right angle)
- d. Kite with no right angle and no parallel sides

15 Finish the square



Three corners of a square are $A(2, 3)$, $B(6, 3)$ and $C(6, 7)$.

- Find the fourth corner D.
- A student says D is at $(2, 6)$. Explain the mistake.

16 Missing corner of a parallelogram



The points $K(1, 1)$, $L(4, 1)$ and $M(6, 4)$ are three corners of the parallelogram KLMN. Find N.

17 Which statements are true?



Say whether each statement is true. If it is false, give a counterexample.

- Every rhombus is a parallelogram.
- Every parallelogram is a rectangle.
- Every square is a rhombus.

Then list every name that fits a square.

18 The drone flight



A drone starts at $(2, 1)$. It flies 3 units right, then 4 units up, then 2 units left, then 1 unit down. Each unit is 20 meters.

- Where does the drone finish?
- How many meters did it fly in all?
- Going back along grid lines only, what is the shortest distance to the start?

19 Right and isosceles



- Draw a triangle on the coordinate plane with corners $(1, 1)$, $(5, 1)$ and $(1, 5)$. Name it by its sides and by its angles.
- Can a triangle have two right angles? Explain, using parallel lines.

20 Triangle Venn diagram



Circle A is “at least two equal sides”. Circle B is “has a right angle”. Place each triangle.

- Equilateral triangle
- Right isosceles triangle
- Right scalene triangle
- Obtuse isosceles triangle
- Acute scalene triangle
- Obtuse scalene triangle

21 The flower bed



Zoe marks a flower bed with corners $(1, 1)$, $(7, 1)$, $(5, 4)$ and $(3, 4)$. Each unit is 1.5 meters.

- Which quadrilateral is it? How many pairs of parallel sides does it have?
- How long are the two parallel sides in meters?
- She puts a fence on the two parallel sides only. How many meters of fence does she need?



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