Merit Tutoring

Worksheet 43: The Cartesian Plane — Reading Coordinates

Year 6 Mathematics — Space & Geometry — Name:

_____

Section 1: Fluency — Plotting Points

Important Reminder: Coordinates are written as

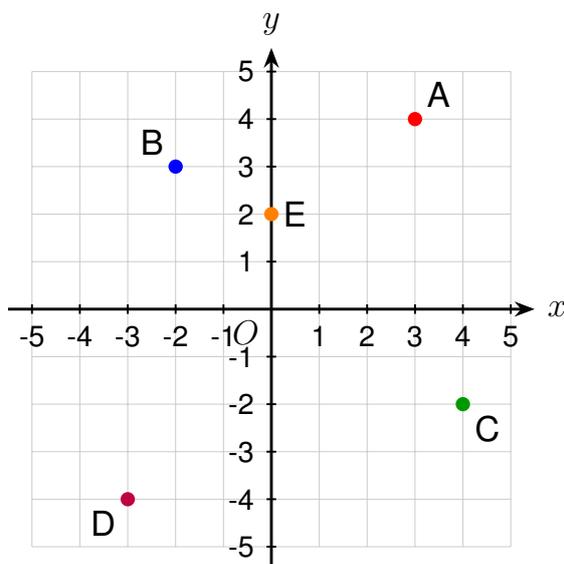$$(x, y)$$

Remember: "Walk before you fly" — move across the

$$x$$

-axis first, then up/down the

$$y$$

-axis!

Use the grid below to answer Questions 1-5:

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Question 1: Write the coordinates for Point A.

Answer: _____

Question 2: Write the coordinates for Point B.

Answer: _____

Question 3: Write the coordinates for Point C.

Answer: _____

Question 4: Write the coordinates for Point D.

Answer: _____

Question 5: Write the coordinates for Point E. *Hint:* Point E is on the y

-axis!

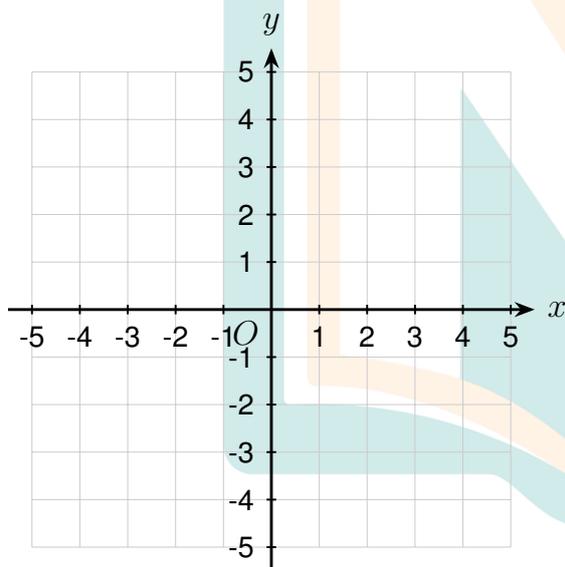**Answer:** _____

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Coordinate Cat Champion!

Why did the coordinate refuse to leave home?
Because there's no place like (0,0)!

Section 2: Reasoning — Plotting the Spot

Use this empty grid for Questions 6-10. Plot each point and label it clearly:

Question 6: Plot the point

$$(2, -3)$$

and label it P.

Question 7: Plot the point

$$(-4, -1)$$

and label it Q.

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Question 8: Plot the point

$$(-3, 4)$$

and label it R.

Question 9: Plot the point

$$(5, 1)$$

and label it S.

Question 10: Plot the point

$$(0, -4)$$

and label it T. *Hint:* This point is on one of the axes!

Grid Gopher Genius!

What's a mathematician's favorite place to eat?
At the coordinate diner... they serve ordered pairs!

Section 3: Challenge — The Origin & Axes

Question 11: What are the coordinates of the Origin (where the

$$x$$

-axis and

$$y$$

-axis meet)?

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Answer: _____

Question 12: Point Z is on the

$$y$$

-axis. Its

$$y$$

-coordinate is 5. What are its full coordinates?

Answer: _____

Question 13: Point W is on the

$$x$$

-axis. Its

$$x$$

-coordinate is

$$-3$$

. What are its full coordinates?

Answer: _____

Question 14: Which quadrant (section) is the point

$$(4, 3)$$

in? *Hint:* Both numbers are positive!

Answer: _____

5

Question 15: Which quadrant is the point

$$(-2, -5)$$

in? *Hint:* Both numbers are negative!

Answer: _____

Question 16: True or False: The point

$$(0, 0)$$

is in the first quadrant.

Answer: _____

Coordinate Captain!

Why did the pirate bring a Cartesian plane to the island?
Because he heard treasure was at point (X, marks the spot)!

Excellent navigation! Check your answers on the next page.

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Worksheet 43: Answer Key

Section 1: Fluency — Plotting Points

Question 1:
$$(3, 4)$$

Question 2:
$$(-2, 3)$$

Question 3:
$$(4, -2)$$

Question 4:
$$(-3, -4)$$

Question 5:
$$(0, 2)$$

Section 2: Reasoning — Plotting the Spot

Question 6: Students should plot point P at

$$(2, -3)$$

Question 7: Students should plot point Q at

$$(-4, -1)$$

Question 8: Students should plot point R at

$$(-3, 4)$$

Question 9: Students should plot point S at

$$(5, 1)$$

Question 10: Students should plot point T at

$$(0, -4)$$

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(on the

$$y$$

-axis)

Section 3: Challenge — The Origin & Axes

Question 11:

$$(0, 0)$$

Question 12:
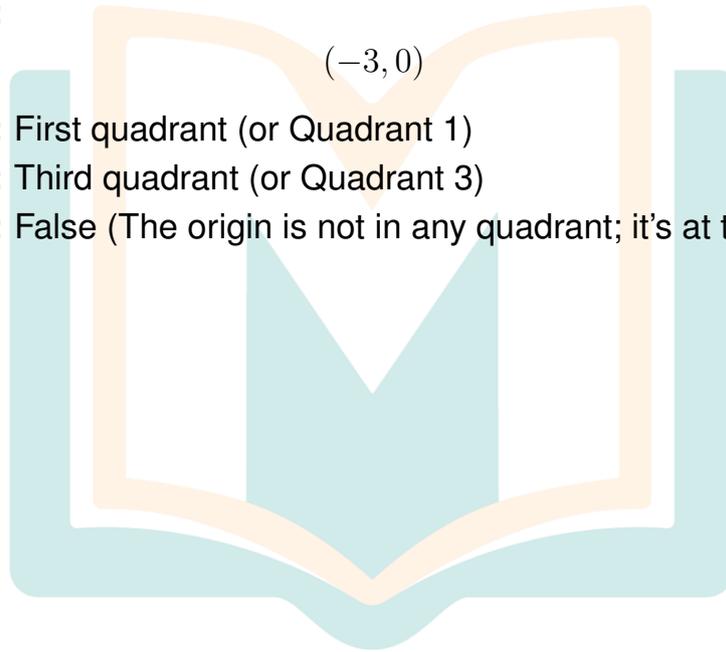
$$(0, 5)$$

Question 13:

$$(-3, 0)$$

Question 14: First quadrant (or Quadrant 1)
Question 15: Third quadrant (or Quadrant 3)
Question 16: False (The origin is not in any quadrant; it's at the intersection of the axes)
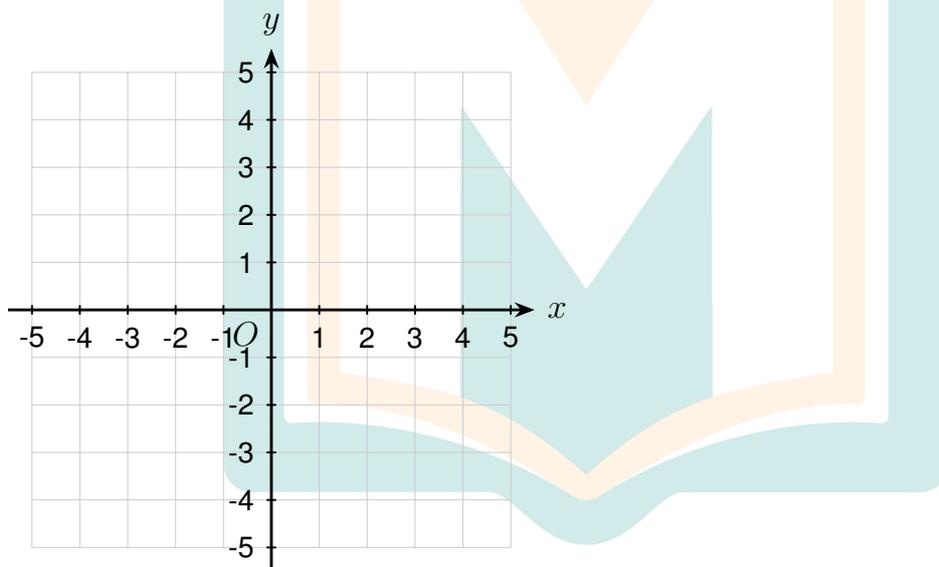
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Worksheet 44: Shape & Movement on the Plane

Year 6 Mathematics — Space & Geometry — Name:

_____

Section 1: Fluency — Making Shapes

Use this grid for Questions 1-5:

Question 1: Plot these four points:

$(1,1)$

,

$(1,3)$

,

$(3,3)$

,

$(3,1)$

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. Connect them with straight lines. What shape do you get?

Answer: _____

Question 2: Plot these three points:

$$(0,0)$$

,

$$(4,0)$$

,

$$(2,3)$$

. Connect them. What shape do you get?

Answer: _____

Question 3: A rectangle has corners at

$$(-2,1)$$

,

$$(2,1)$$

,

$$(2,-2)$$

, and

$$(-2,-2)$$

. How many units wide is it?

Answer: _____

Question 4: Using the same rectangle from Question 3, how many units tall

10

is it?

Answer: _____

Question 5: Plot the points
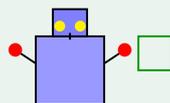
$$(-1, -1)$$

,

$$(1, -1)$$

,

$$(1, 1)$$

,

$$(-1, 1)$$

. What special type of rectangle is this?

Answer: _____

Shape Shifter Supreme!

What did the square say to the circle on the Cartesian plane?
You've got no point... but at least you're well-rounded!

Section 2: Reasoning — Directions

Question 6: Start at

$$(0, 0)$$

. Move 2 units Right and 3 units Down. What are your new coordinates?

Answer: _____

Question 7: Start at

$$(-2, -2)$$

. Move 4 units Up. What are your new coordinates?

Answer: _____

Question 8: Start at

$$(3, 5)$$

. Move 5 units Left and 2 units Down. What are your new coordinates?

Answer: _____

Question 9: Start at

$$(-1, 4)$$

. Move 3 units Right. What are your new coordinates?

Answer: _____

Question 10: A point moves from

$$(2, 1)$$

to

$$(2, -3)$$

. In which direction did it move, and how many units?

Answer: _____

Question 11: A point moves from

$$(-4, -2)$$

to

$$(1, -2)$$

. In which direction did it move, and how many units?

Answer: _____

> ### Direction Detective!
>
> *Why don't coordinates ever get lost?*
> *Because they always know their position!*

Section 3: Challenge — Reflection

Question 12: Plot point A at
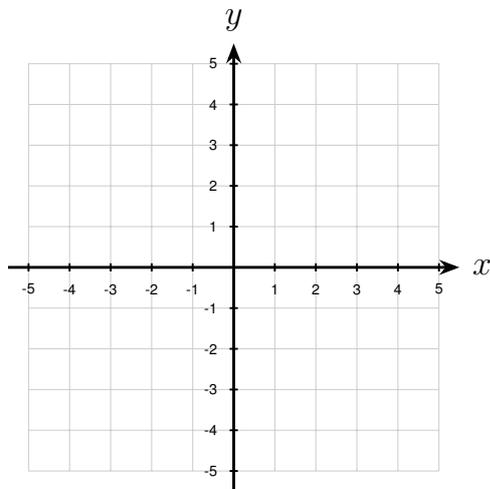
$$(3, 2)$$

. Now reflect it over the

$$x$$

-axis (flip it down — keep the same

$$x$$

, but change the

$$y$$

to its opposite). What are the coordinates of the new point?

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Answer: _____

Question 13: Plot point B at

$$(-2, 4)$$

. Reflect it over the

$$x$$

-axis. What are the new coordinates?

Answer: _____

Question 14: Plot point C at

$$(4, -3)$$

. Reflect it over the

$$y$$

-axis (flip it left — change the

$$x$$

to its opposite, keep the same

$$y$$

). What are the new coordinates?

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Answer: _____

Question 15: Plot point D at

$$(-1, -2)$$

. Reflect it over the

$$y$$

-axis. What are the new coordinates?

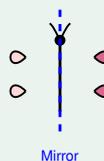**Answer:** _____

Question 16: Challenge: What happens to the point

$$(0, 3)$$

when you reflect it over the

$$y$$

-axis?

Answer: _____

Mirror

Reflection Ruler!

What did one coordinate say to its reflection?
You're just like me, but opposite!

Brilliant work! Check your answers on the next page.

Worksheet 44: Answer Key

Section 1: Fluency — Making Shapes

Question 1: Square

Question 2: Triangle

Question 3: 4 units wide (from

$$x = -2$$

to

$$x = 2$$

)

Question 4: 3 units tall (from

$$y = -2$$

to

$$y = 1$$

)

Question 5: Square (all sides are 2 units)

Section 2: Reasoning — Directions

Question 6:
$$(2, -3)$$

Question 7:
$$(-2, 2)$$

Question 8:
$$(-2, 3)$$

Question 9:
$$(2, 4)$$

Question 10: Down, 4 units

Question 11: Right, 5 units

Section 3: Challenge — Reflection

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Question 12:

$$(3, -2)$$

Question 13:

$$(-2, -4)$$

Question 14:

$$(-4, -3)$$

Question 15:

$$(1, -2)$$

Question 16: It stays the same:

$$(0, 3)$$

because it's on the

$$y$$

-axis (the mirror line)

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