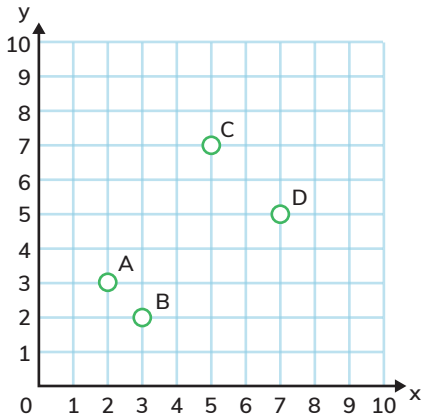
Solve real-world and mathematical problems by plotting points in all four quadrants of the coordinate plane, and find distances between points with the same first coordinate or the same second coordinate. CCSS.MATH.CONTENT.6.NS.C.8 | G6M3C18E1

Some thieves steal the Hand of Midas and other gold items from the treasure vault you built. Let's find the stolen things that are hidden around the island.

1 A few of the stolen items are hidden near a huge tree at (2,3). Check the box that represents the correct location of the tree on the coordinate plane.



☐ A ☐ B ☐ C ☐ D

2 The thieves hide some pouches of gold coins on the banks of a river at P1(-3,4) and P2(-3,-4). Complete the provided steps to plot the points on the graph. Write your answer in the boxes given below.

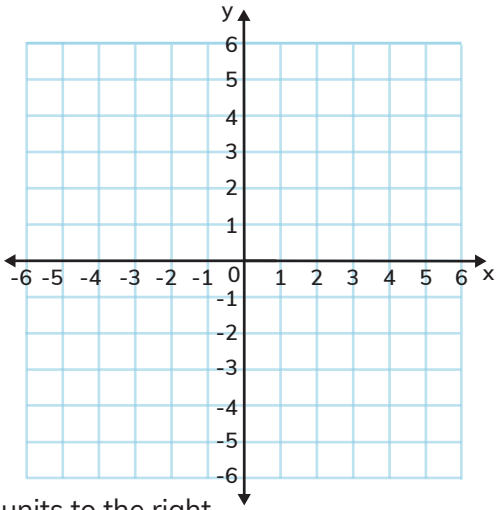
To graph P1:

Step 1: Start at (0,0).

Step 2: Move ☐ units to the left, as x-coordinate is negative.

Step 3: Move ☐ units upwards, as y-coordinate is positive.

Plot the points on the graph.



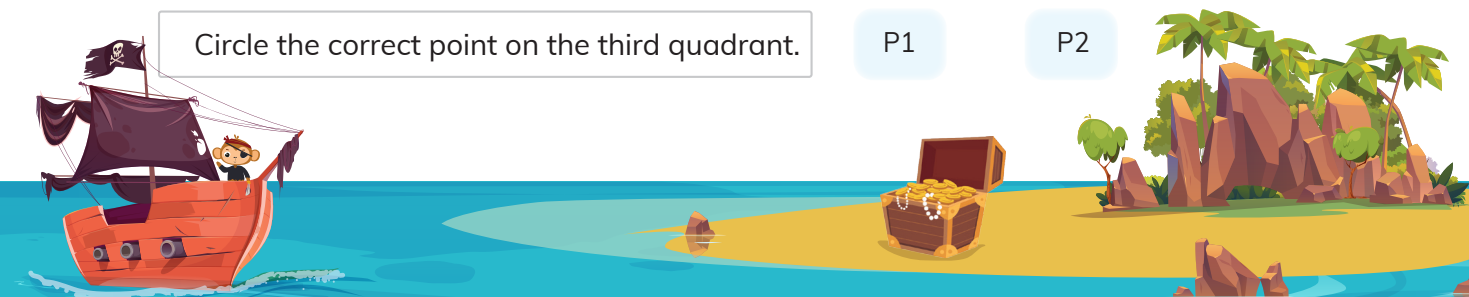
To graph P2:

Step 1 is identical while plotting P1. For Step 2 and Step 3, check the correct respective movements.

☐ Move 3 units to the left and 4 units downwards.

☐ Move 3 units to the right and 4 units downwards.

Circle the correct point on the third quadrant. P1 P2



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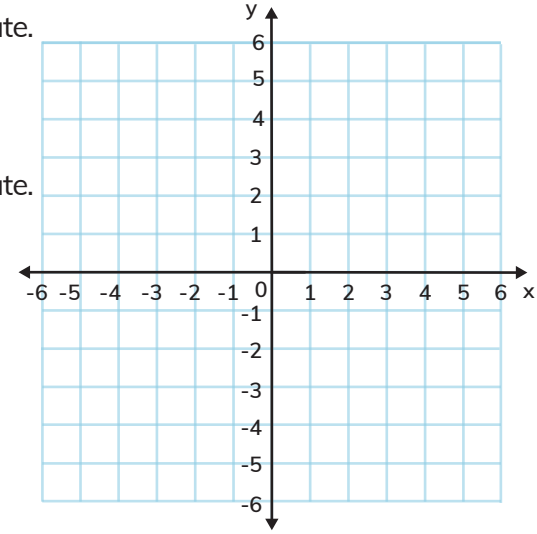
3 Some of the precious gems from the stolen treasure are stashed on either side of a hill, at A(2,-5) and B(2,3). Plot the points and follow the provided steps to find the distance between them. Write your answer in the boxes given below.

Plot the points on the graph.



Step 1: Both A and B have the same [ ] -coordinate.

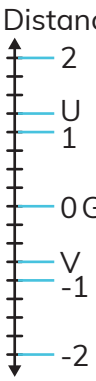
Step 2: Hence, the distance between A and B is the absolute value of the difference between [ ] -coordinate.

Step 3: So, the distance between A and B

= | [ ] [ ] - 3 | units

= | [ ] [ ] | = [ ] units

A To find the rest of the stolen treasure, you have to jump from a rock that is $\frac{5}{4}$ m above ground to a pit that is $\frac{3}{4}$ m below the ground. Find these points on the provided number line. Write your answer in the boxes given below.



Hint: Depth (below ground) of the pit is a negative number.

On the number line, the tip of the rock is : at the point [ ] (U or V)

On the number line, the bottom of the pit is at the point : [ ] (U or V)

The distance between U and V is the total height you need to jump through. Circle the correct total height you have to jump.

$\frac{1}{2}$ m

2 m

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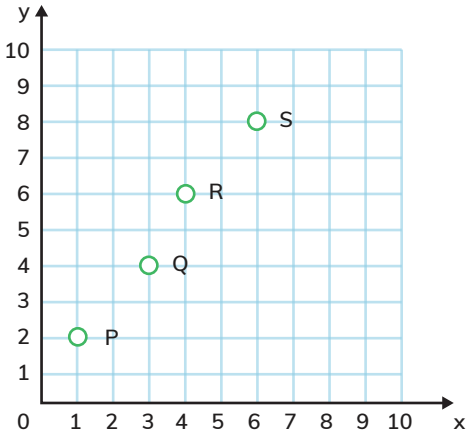
After successfully finding the stolen items, you decide to secure the Hand of Midas and other gold items in a stronger fort this time. Let's collect the materials needed to build a fort.

1 The stones needed to build a fort are available at the locations P, Q, R, and S on a hill as shown on the provided graph. Which of the following tables has the correct coordinates of P, Q, R, and S? Check the correct box.



	P	Q	R	S
x	1	4	6	8
y	2	3	4	6

	P	Q	R	S
x	1	3	4	6
y	2	4	6	8

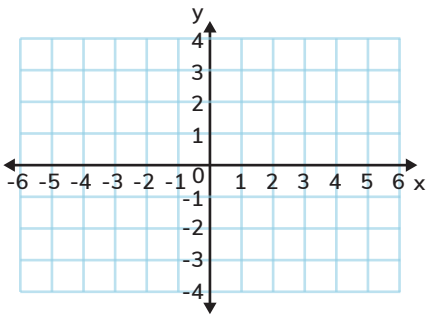
2 To collect the sand needed to build the fort, you need to cross a bridge connecting the points P(4,-3) and Q(-5,-3). Plot these points on the graph. The steps to find the distance between these points are given below. Match them correctly and answer the following questions.

Step 1: ●
- ● Find the absolute value of the difference, i.e., |-9| = 9.

Step 2: ●
- ● P and Q have the same y-coordinate. Thus, the different coordinates are -5 & 4.

Step 3: ●
- ● Calculate the difference between -5 and 4, i.e., (-5 - 4) = -9.

Plot the points on the graph.



Circle the correct quadrant on which P and Q lie.

P lies on quadrant: II III IV

Q lies on quadrant: II III IV

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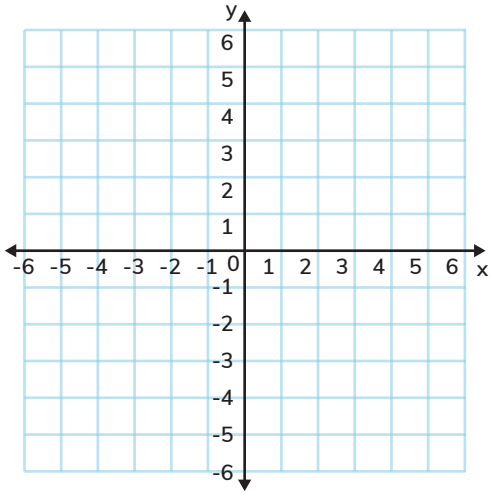
3 To collect the wood needed to build the fort, you move sequentially from Point A to Point D. The coordinates of these points are: A(4,4), B(-3,4), C(-3,-5), and D(6,-5). Plot these points and find the distance between them. Write your answer in the boxes given below.

Plot the points on the graph.



Distance between A and B = ☐ units

Distance between B and C = ☐ units

Distance between C and D = ☐ units

4 Finally, you make a water channel from P(-4,-5) to L(5,z) to get the water needed to build the fort. The distance between these points is 9 units. Check the correct statement(s) to find the value of z.

Hint: Along a horizontal line on the graph, only the x-coordinate changes.

☐ Distance between these two points is equal to the absolute value of difference between their x-coordinates.

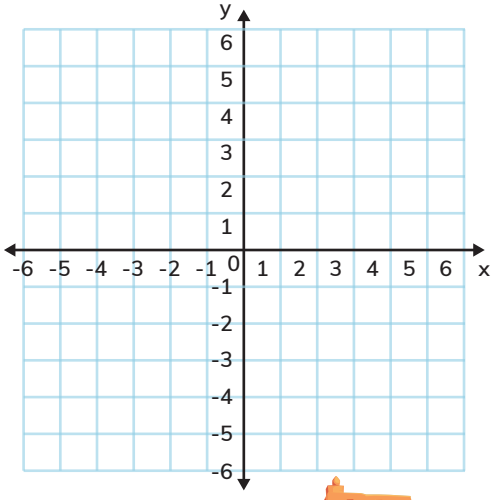
☐ It is a horizontal line.

☐ They have different y-coordinates.

Write the value of z in the adjacent boxes.

z = ☐☐

Plot the points on the graph.



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Let's build a highly secure fort around the treasure.

Follow the steps to choose the four corners P1, P2, P3, and P4 of the rectangular fort and then build it. **Note: The negative sign for the negative coordinates are already given.**

Step 1: Follow the given guidelines to choose the coordinates of P1 and P2.

Guidelines:

- x-coordinate of P1 should be between 4 to 8 (both inclusive).
- x-coordinate of P2 should be between -9 to -2 (both inclusive).
- y-coordinate of P1 and P2 are same and it should be between 3 to 9 (both inclusive).

Write the chosen coordinates for P1 and P2 in the boxes given below.

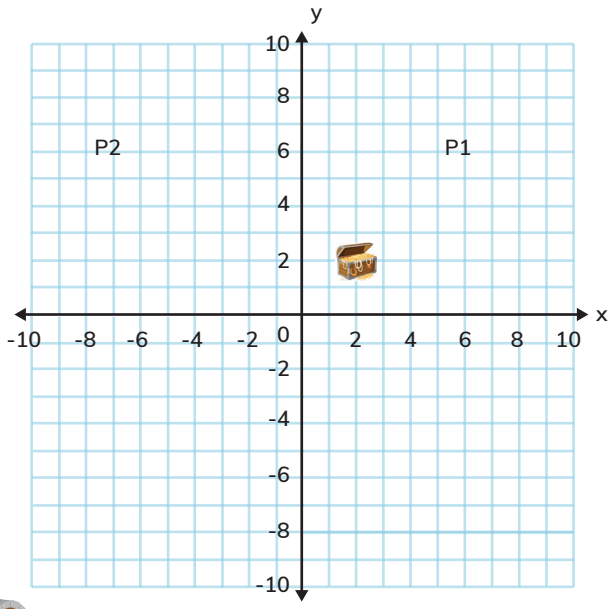
x-coordinate of P1 = ☐ y-coordinate of P1 = ☐

x-coordinate of P2 = - ☐ y-coordinate of P2 = ☐

Step 2: The treasure is kept at (2,2). Plot P1 and P2 on the graph and find the distance between the points P1 and P2. Write your answer in the boxes given below.

Distance between P1 and P2 = D1

D1 = ☐☐ units



Is 7 < D1 < 16? Circle the correct option.

Yes No

If yes, then go to **Step 3**. If no, then go to **Step 1** and change the chosen coordinates of P1 or P2, or both.

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Step 3: Follow the given guidelines to choose the coordinates of P3.

Guidelines:

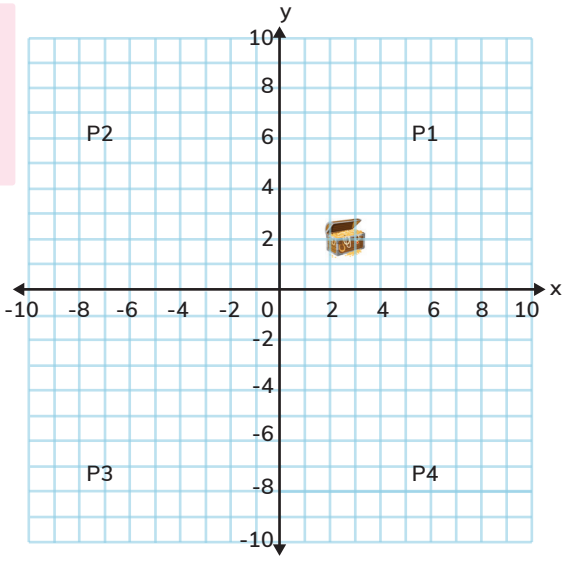
- x-coordinate of P3 = x-coordinate of P2
- y-coordinate of P3 should be between -8 to -2 (both inclusive).

Write the chosen coordinates for P3 in the boxes given below.

x-coordinate of P3 =

x-coordinate of P2 = -

y-coordinate of P3 = -



Step 4: Plot the points P1, P2, and P3 on the graph above and find the distance between P2 and P3. Write your answer in the boxes given below.

Distance between P2 and P3 = D2

D2 = units

Is 6 < D2 < 16? Circle the correct option.

Yes No

If the answer is yes for the above question, then go to **Step 5**. If no, then go to **Step 3** and change the chosen coordinates of P3.

Step 5: x-coordinate of P4 = x-coordinate of P1, and y-coordinate of P4 = y-coordinate of P3. Write the coordinates of P4 in the boxes given below. Plot these coordinates on the graph above.

Coordinates of P4 = (, -)

Join the four corners plotted on the graph to complete the fort.

That is a stunning fort! Congratulations on securing the treasure by building a fort around it.