



# Colin and Coco's Daily Maths Workout

Workout 6.7

Answers

Properties of Shapes

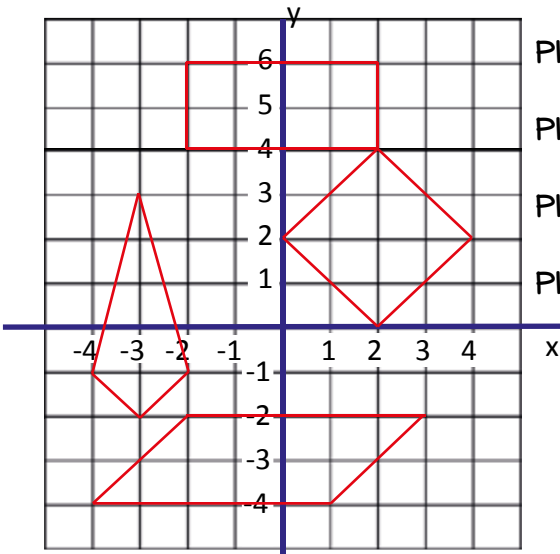




# Shape Workout

Plot the points then find the point to finish the shape.

Workout A



Plot (2, 0) (4, 2) (2, 4) then make a square (0, 2)

Plot (2, 4) (2, 6) (-2, 6) then make a rectangle (-2, 4)

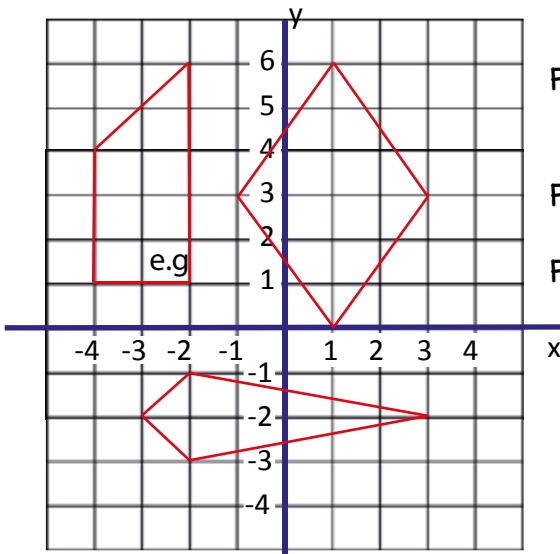
Plot (-3, -2) (-4, -1) (-3, 3) then make a kite (-2, -1)

Plot (-4, -4) (-2, -2) (3, -2) then make a parallelogram (1, -4)

# Shape Workout

Plot the points then find the point to finish the shape.

Workout B



Plot (-4, 1) (-4, 4) (-2, 6) then make a trapezium e.g. (-2, 1)  
Possible solutions: x coordinate = -2, y coordinate < 6 but not 3

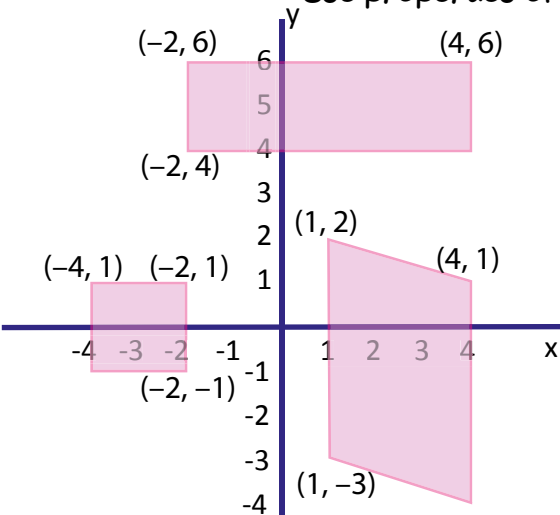
Plot (-1, 3) (1, 0) (3, 3) then make a rhombus (1, 6)

Plot (3, -2) (-2, -3) (-3, -2) then make a kite (-2, -1)

# Shape Workout

Workout C

Use properties of shapes to calculate the missing coordinates.



1. Rectangle: Missing coordinate is (4, 4)

2. Square: Missing coordinate is (-4, -1)

3. Parallelogram: Missing coordinate is (4, -4)



# Coordinate Challenge Game

Workout D

You need:

- Coordinate cards (on the next page)
- Coordinate Challenge Board (on the next page)
- A different coloured pencil for each player

To play:

- Shuffle the cards and put them face down on the table.
- Take turns to turn over two cards.
- Use the numbers to make the coordinates of a point.
- Plot your point on the grid.

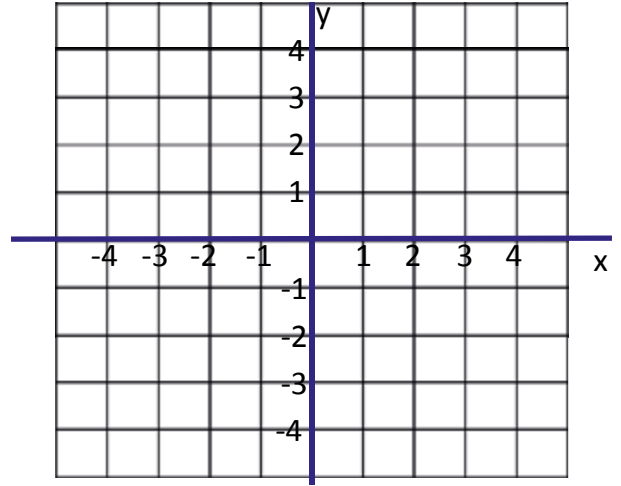
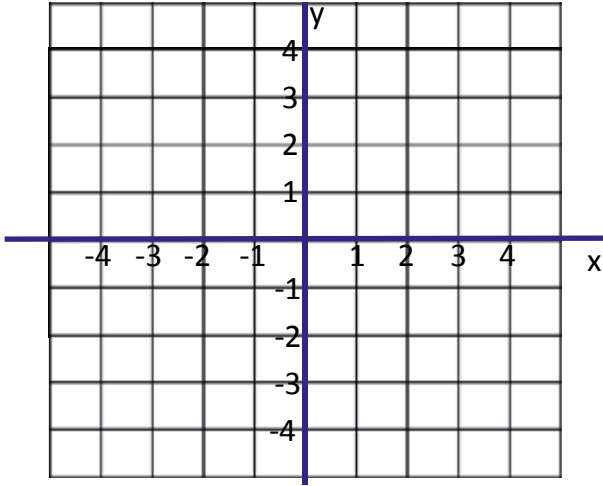
I have turned over 3 and -2 so could plot  $(3, -2)$  or  
I could plot  $(-2, 3)$

To win:

The winner is the first player to plot three points in a straight line, horizontally or vertically. The three points do not have to be right next to each other.



# Coordinate Challenge Board



-4

-3

-2

-1

0

1

2

3

4



## Missing Number Workout

Workout E

Colin is making shapes by plotting points on a coordinate grid.  
Place digits in the empty boxes to complete the sets of  
coordinates in several ways.

Possible  
Solution

Square	(3, 3)	( <input type="text" value="6"/> , <input type="text" value="0"/> )	(6, 6)	( <input type="text" value="9"/> , <input type="text" value="3"/> )
Parallelogram	(5, 2)	( <input type="text" value="7"/> , <input type="text" value="2"/> )	(6, 5)	( <input type="text" value="8"/> , <input type="text" value="5"/> )
Right-Angled Triangle	(1, 2)	( <input type="text" value="1"/> , <input type="text" value="4"/> )	(5, 4)	

Are there any boxes that it is impossible to put a 5 in?  
Why?

Are there any boxes that could have any of the digits in them?

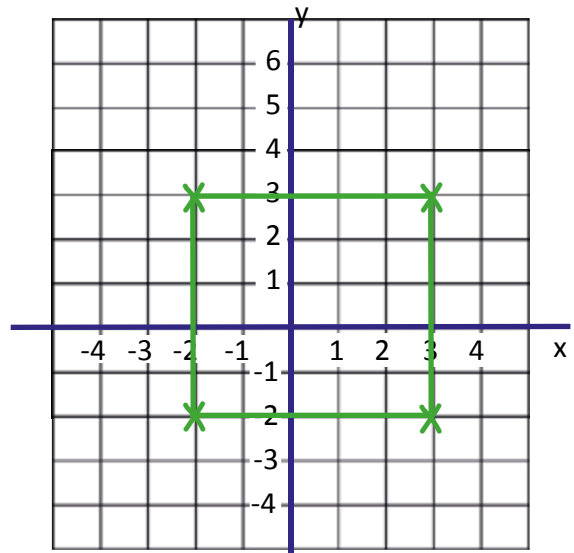
Now complete all the coordinates together using the digits  
0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 once each.



# Quad Quads

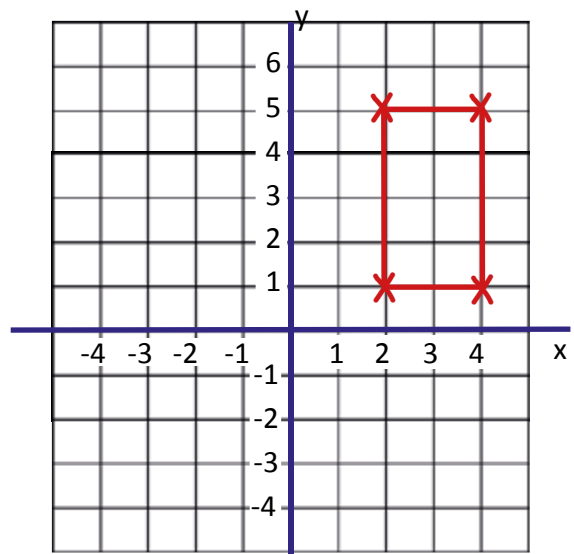
Quad Quads are quadrilaterals that are only allowed to have one vertex in each quadrant.

This is a Quad Quad



Many possible solutions

This is not a Quad Quad



Find sets of coordinates that will make a:

Square  
Trapezium

Parallelogram  
Rhombus

Kite



1. The vertices of a square have coordinates  $(1,1)$ ,  $(1,4)$ ,  $(5,4)$  and  $(a,b)$ .

Find the values of  $a$  and  $b$ .  **$(5, 1)$**

2. The vertices of a right-angled triangle have coordinates  $(2,y)$ ,  $(2,-4)$  and  $(-4,-4)$ .

Find the value of  $y$ . **Possible solution:  $y = 3$**

3. Two vertices of a square have coordinates  $(-3,4)$  and  $(3,4)$ . How many different squares can be made by plotting 2 more points?

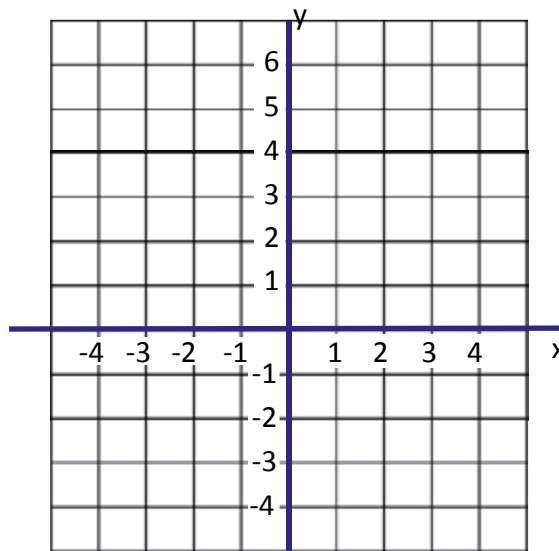
On this grid  
 $(-3, -2)$  and  $(3, -2)$

or

$(0,7)$  and  $(0,1)$

Beyond this grid

$(-3, 10)$  and  $(3, 10)$



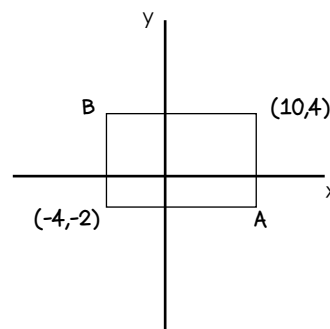
4. The vertices of a rectangle ABCD are A  $(-2,3)$ , B  $(-2,2)$ , C  $(2,2)$  and D  $(2,3)$ .

Find the coordinates of a rectangle with one vertex at A but twice as large. **Possible solution  $(-2, 1)$   $(2, 1)$   $(2, 3)$**

5. Find the coordinates of A and B.

**$A = (10, -2)$**

**$B = (-4, 4)$**





# Who am I? Workout

Use the clues to work out Colin's mystery number.

You may want to cross numbers out on the 100 grid as you consider each clue.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- 1) I am even
- 2) I am not a factor of 30
- 3) I am not a cube number
- 4) I am not a multiple of 10
- 5) My digits are not equal
- 6) Only one of my digits is prime
- 7) I am not a square number
- 8) I am not a multiple of 8
- 9) The sum of my digits is a prime number
- 10) The difference in my digits is 7

Colin's mystery number is 92

Create your own 'Who am I?' puzzle

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Please share your puzzle with Colin @MathsCanDo