



Year 6: Understanding Shape



Previous Slide



Next Slide



Back to Contents (this slide)



*Action Button
(click when it flashes)*

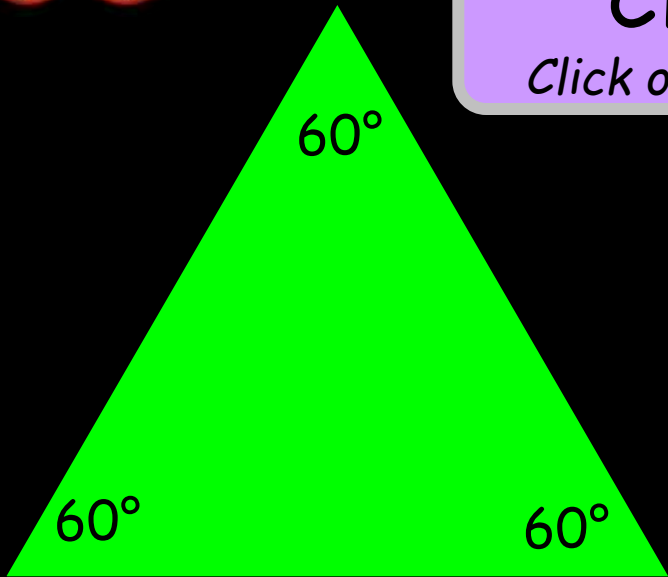
Contents - Please click the Go Button

Classifying Triangles		Using Co-ordinate in 4 Quadrants	
Using a Flow Chart		Parallel & Perpendicular Lines	
3D Shapes		Symmetry	
Faces, Edges & Vertices		Translation	
Net Shapes		Rotational Symmetry	
Using Co-ordinates		Measuring and Estimating Angles	

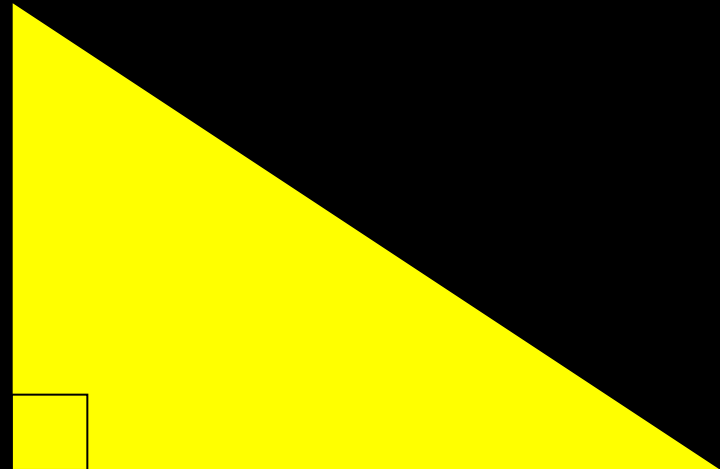


Classifying Triangles

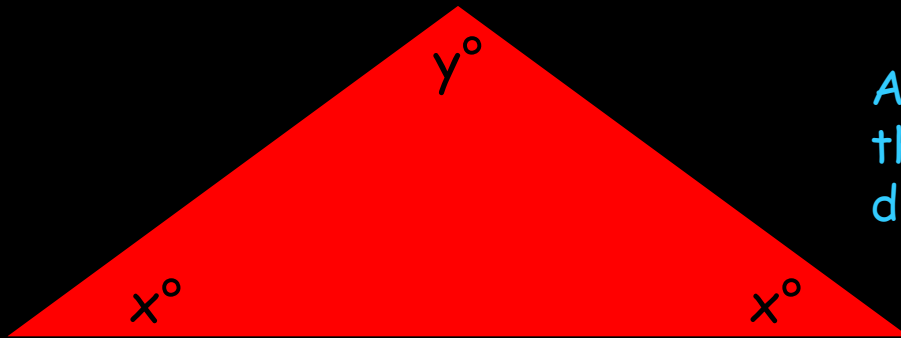
Click on the triangle to reveal its properties



An **equilateral triangle**. All sides are the same length. All angles are the same (60°).

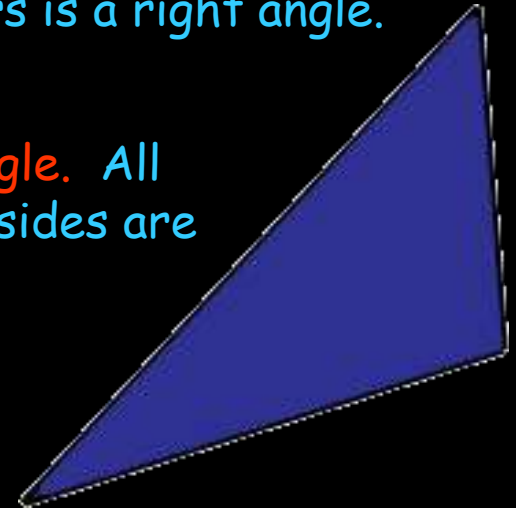


A **right angled triangle**. One of its corners is a right angle.



A **isosceles triangle**. Two angles are the same, and two sides are the same length.

A **scalene triangle**. All the angles and sides are different.

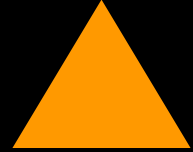
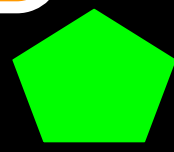
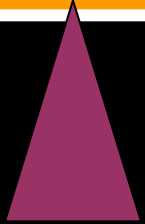




Identifying a Shape

Choose a shape.
Click yes or no to follow the flowchart

Clear



Does the shape have 3 sides?

Yes

No

Has the triangle got a right angle?

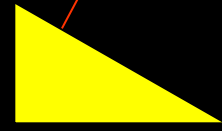
Does the shape have 4 sides?

Yes

No

Yes

No



Right angled triangle

Are all sides the same length?

Does the shape have 4 right angles?

Has the shape got 5 sides?

Yes

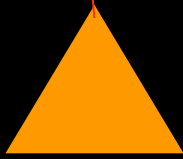
No

Yes

No

Yes

No



Equilateral Triangle



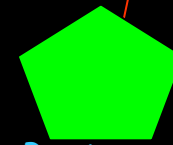
Isosceles Triangle



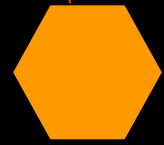
Rectangle



Parallelogram



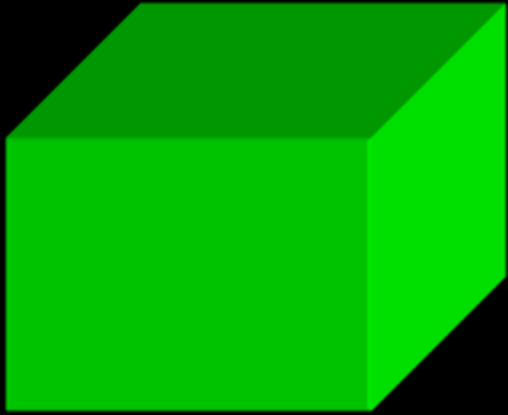
Pentagon



Hexagon



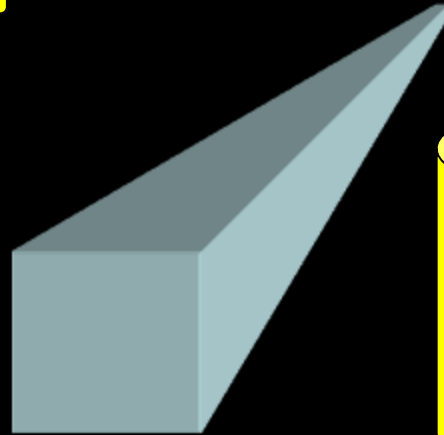
3D Shapes



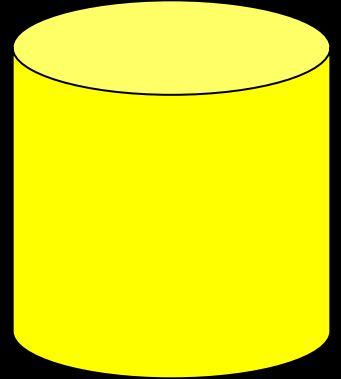
A cuboid.



A cube



Square based
pyramid



A cylinder

3D shapes are difficult to see on a 2D screen, but we'll have a go! Click on a shape to reveal its name.



A triangular prism



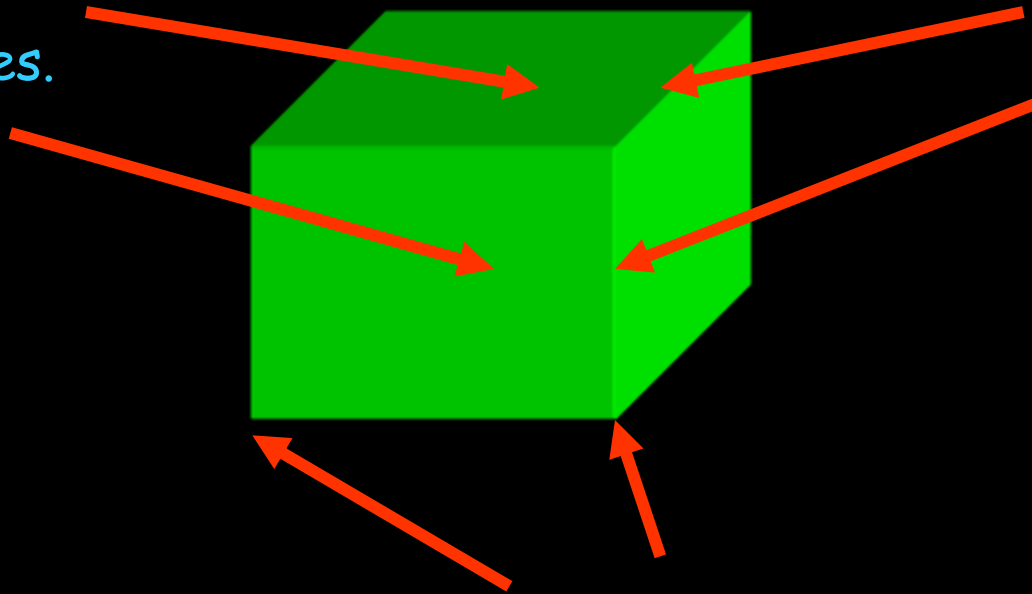
A hexagonal
prism.



3D Shapes:

Faces, edges and vertices.

Faces. This cube will have 6 faces.


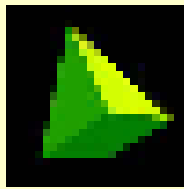





Edges. This is where faces meet. This cube has 12 edges.

Vertices. These are corners of a 3D shape. This cube has 8 vertices.





Name of Shape	Image	No. of faces	No. of edges	No. of vertices
Cuboid		<input data-bbox="1004 235 1265 335" type="text" value="?"/>	<input data-bbox="1342 235 1603 335" type="text" value="?"/>	<input data-bbox="1651 235 1912 335" type="text" value="?"/>
Square based Pyramid		<input data-bbox="1004 385 1265 485" type="text" value="?"/>	<input data-bbox="1342 385 1603 485" type="text" value="?"/>	<input data-bbox="1651 385 1912 485" type="text" value="?"/>
Cylinder		<input data-bbox="1004 606 1265 706" type="text" value="?"/>	<input data-bbox="1342 606 1603 706" type="text" value="?"/>	<input data-bbox="1651 606 1912 706" type="text" value="?"/>
Triangular Prism		<input data-bbox="1004 771 1265 871" type="text" value="?"/>	<input data-bbox="1342 771 1603 871" type="text" value="?"/>	<input data-bbox="1651 771 1912 871" type="text" value="?"/>
Hexagonal Prism		<input data-bbox="1004 935 1265 1035" type="text" value="?"/>	<input data-bbox="1342 935 1603 1035" type="text" value="?"/>	<input data-bbox="1651 935 1912 1035" type="text" value="?"/>

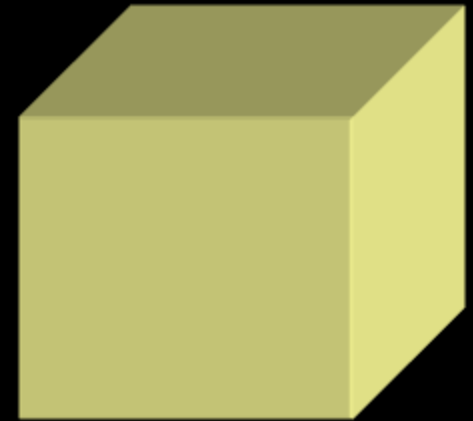
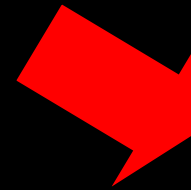
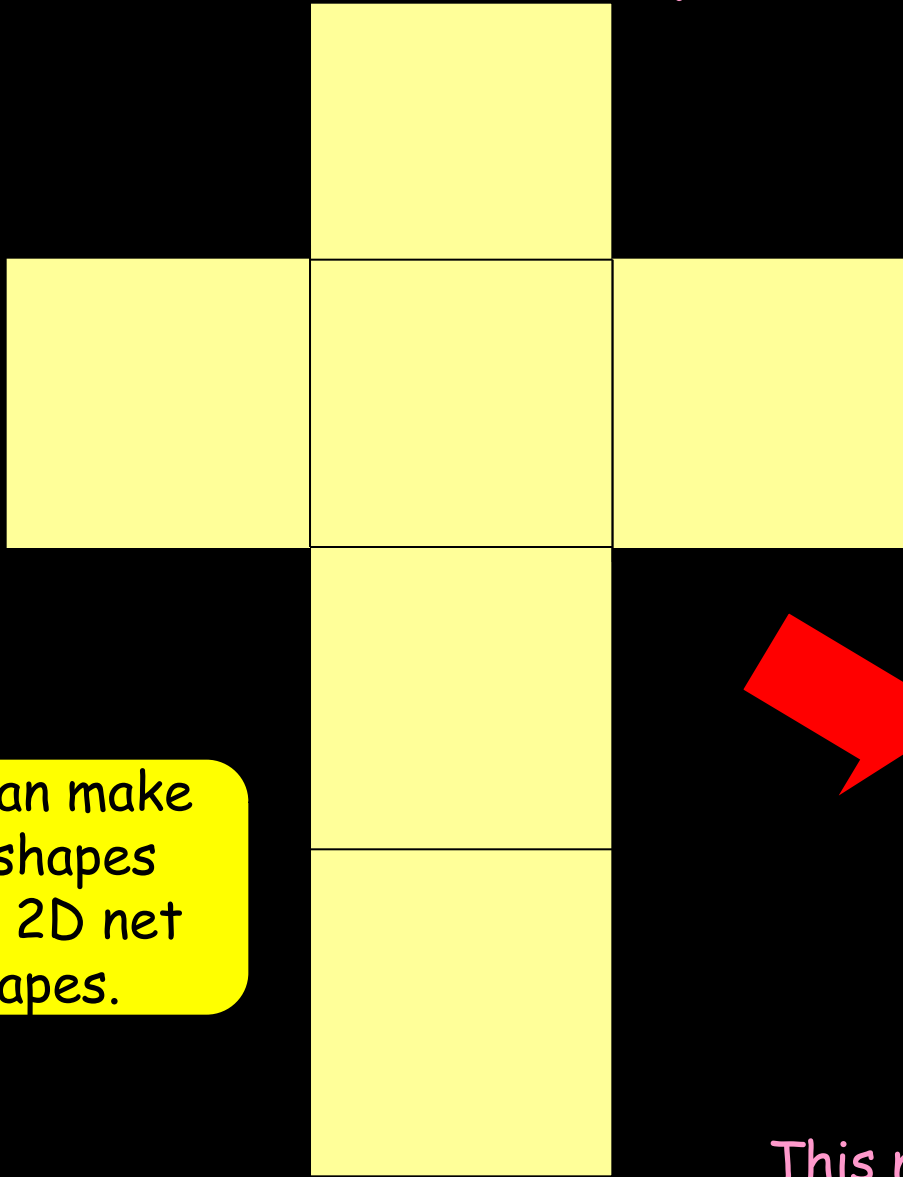


Check
it
out

Can you fill in the missing parts of this table?
Click on the ? to reveal the answer...



Net Shapes

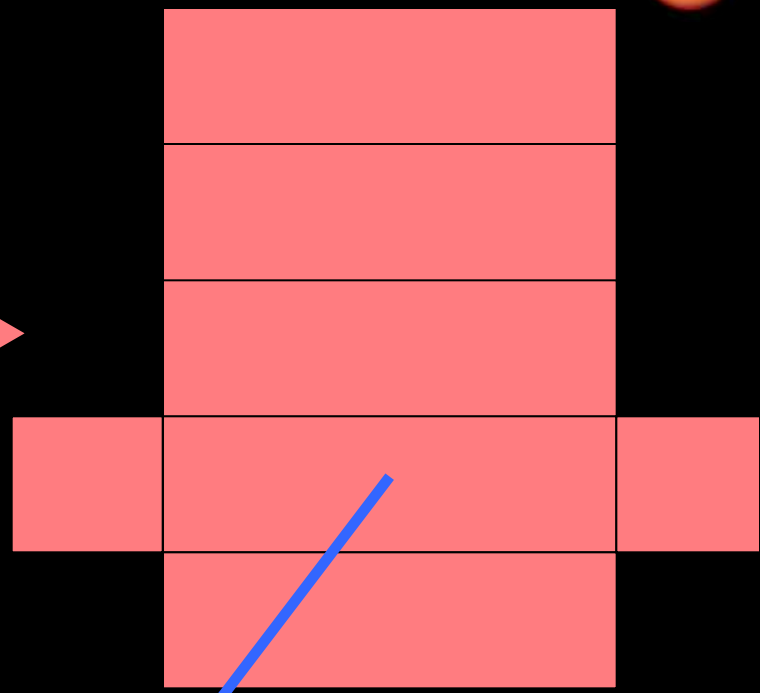
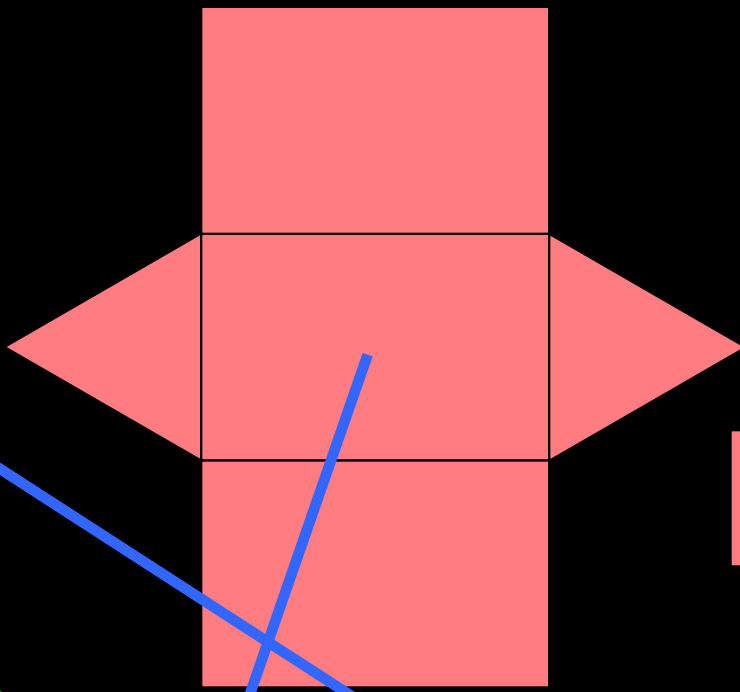
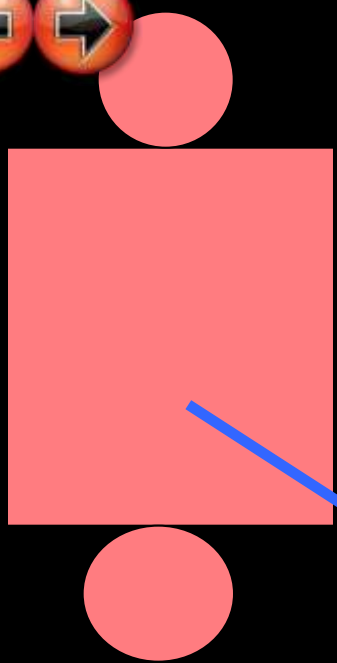


We can make
3D shapes
from 2D net
shapes.



This net shape will
make a cube.

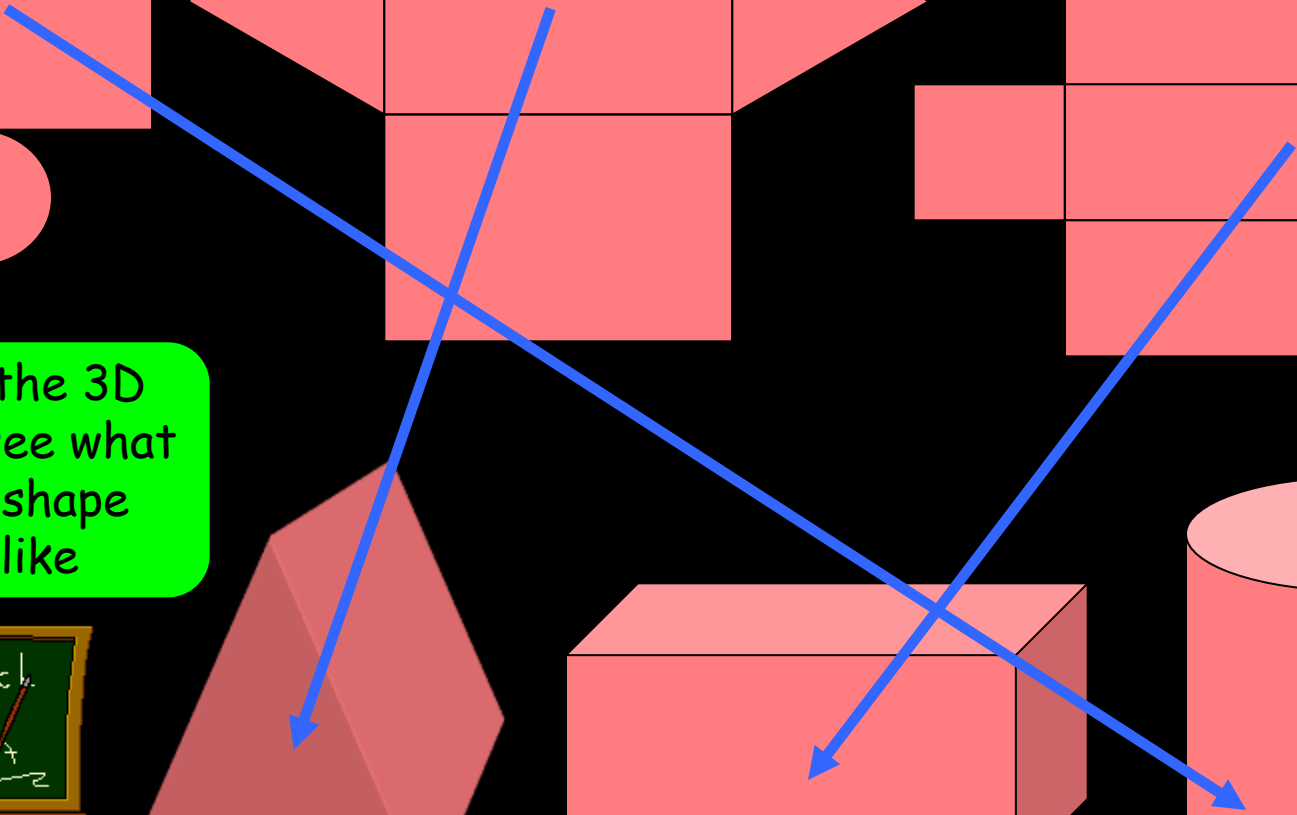
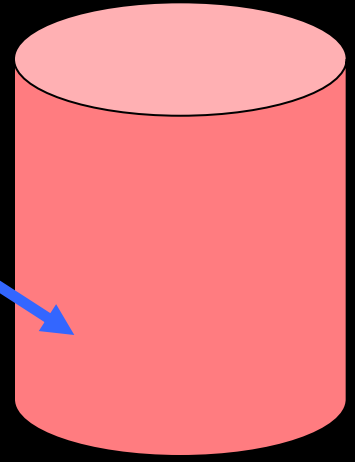
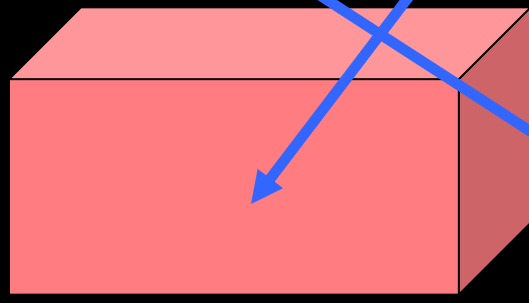
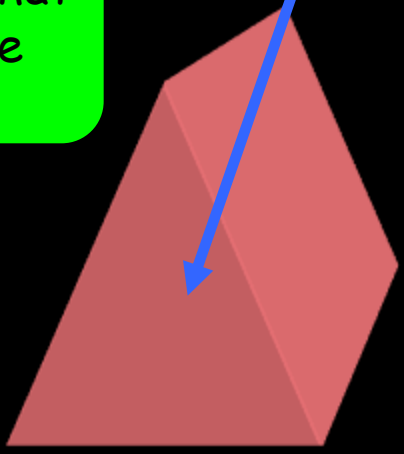




Click on the 3D shape to see what the net shape looks like



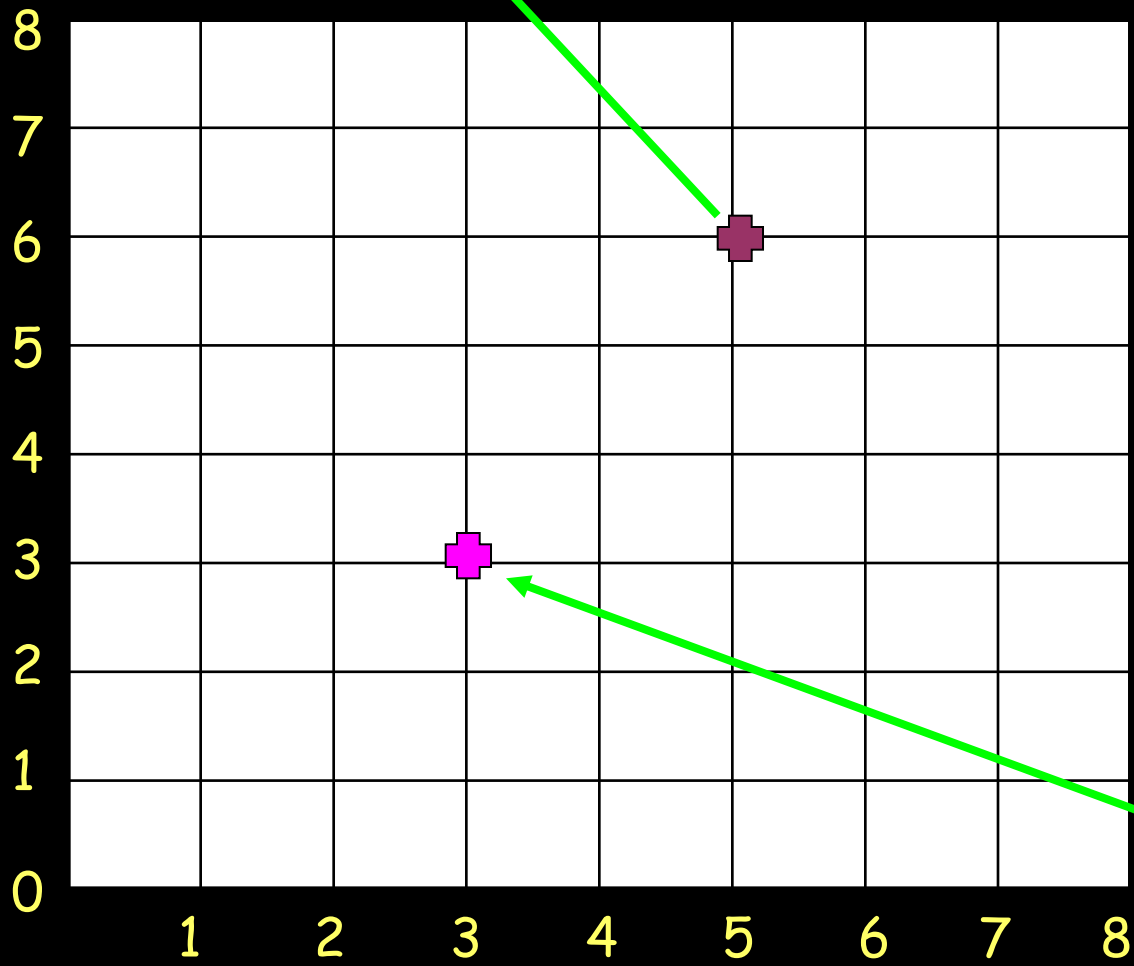
Check it out





Using Co-ordinates

The co-ordinates of this point are (5,6)



Co-ordinates are used to identify where a point can be found.

They are written in brackets. The first number is how many squares along, the second number is how many squares up!

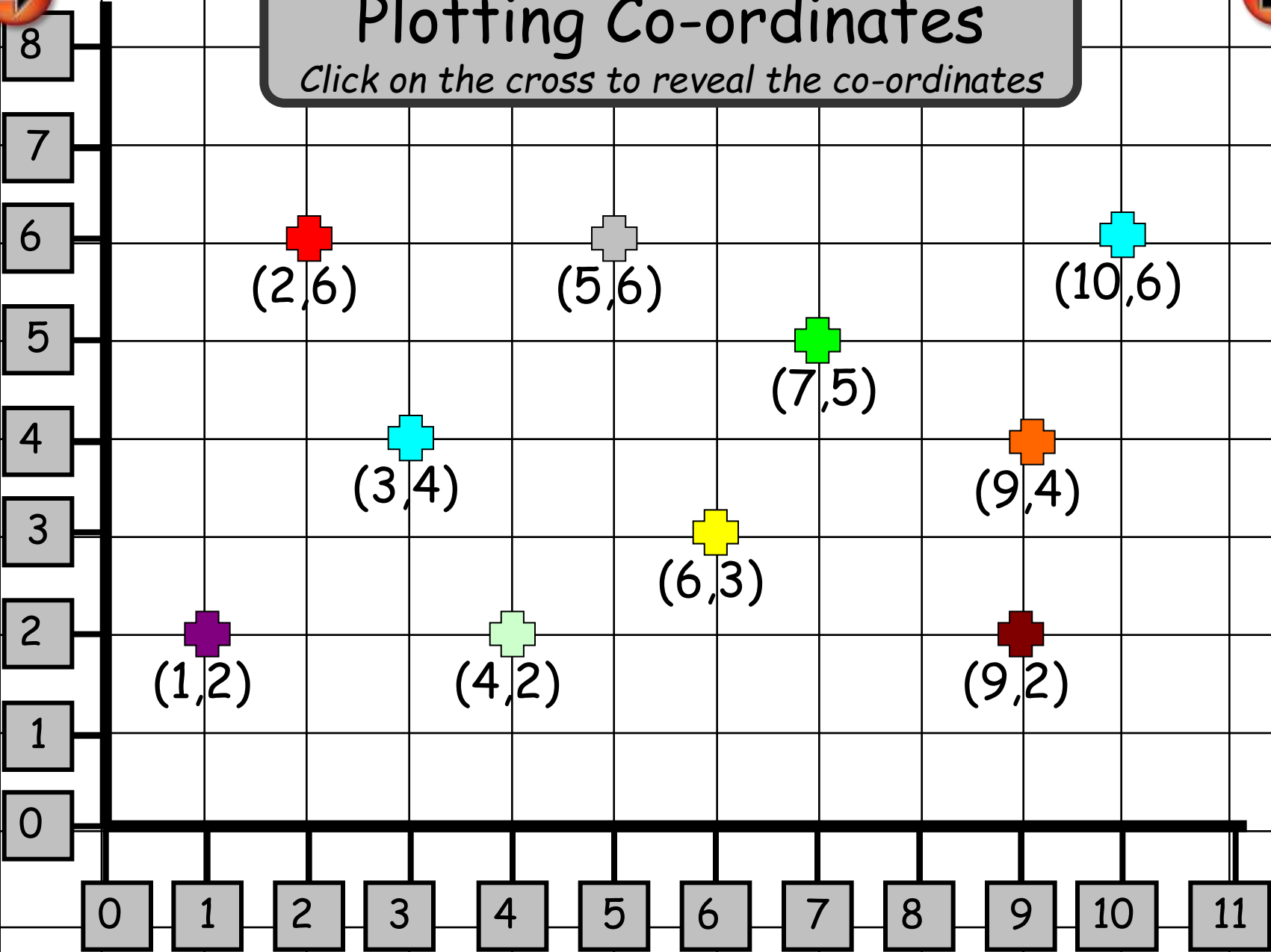
The co-ordinates of this cross are (3,3)





Plotting Co-ordinates

Click on the cross to reveal the co-ordinates





What are the co-ordinates of each corner of these shapes?

Click on the co-ordinates to place them

(3,4)

(1,7)

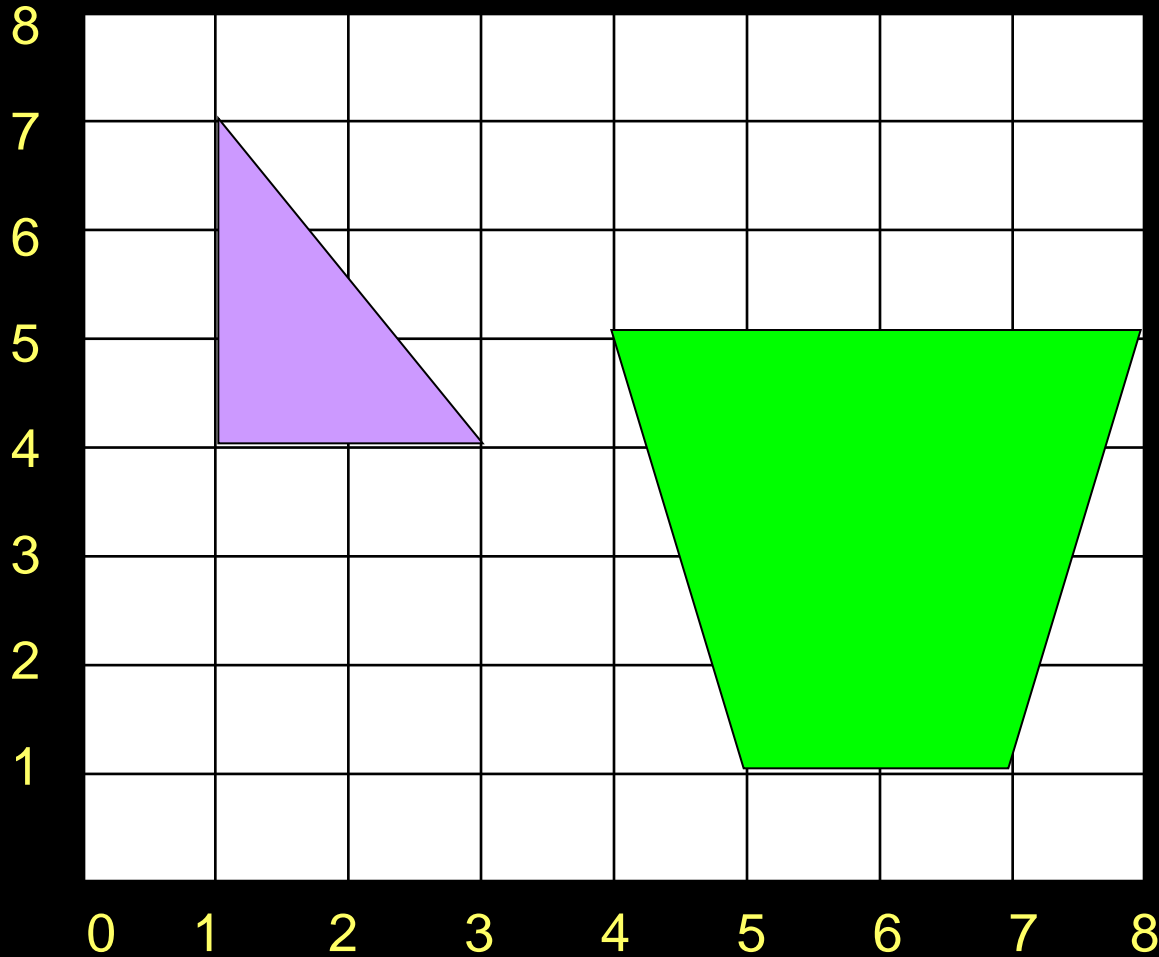
(8,5)

(1,4)

(4,5)

(7,1)

(5,1)





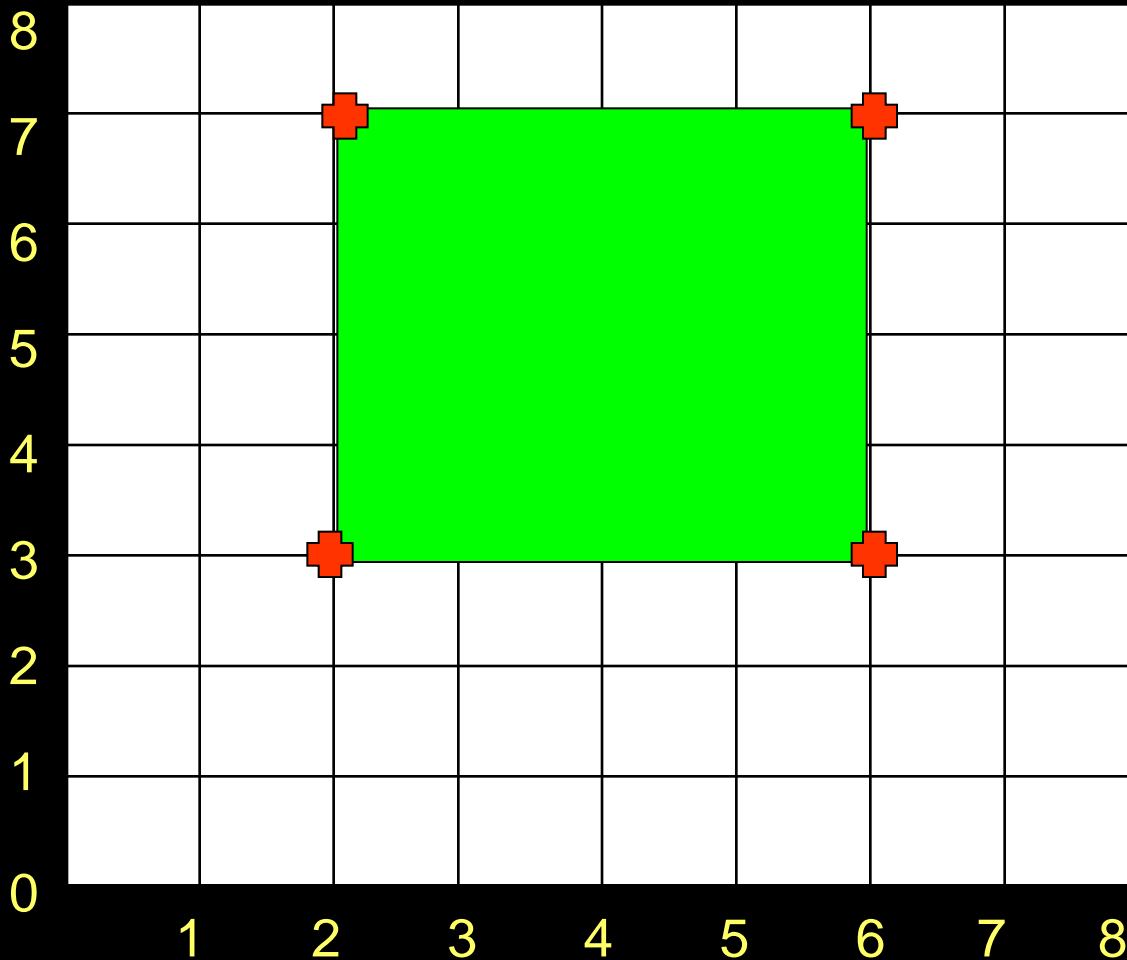
(2,3)

(6,3)

(2,7)

(6,7)

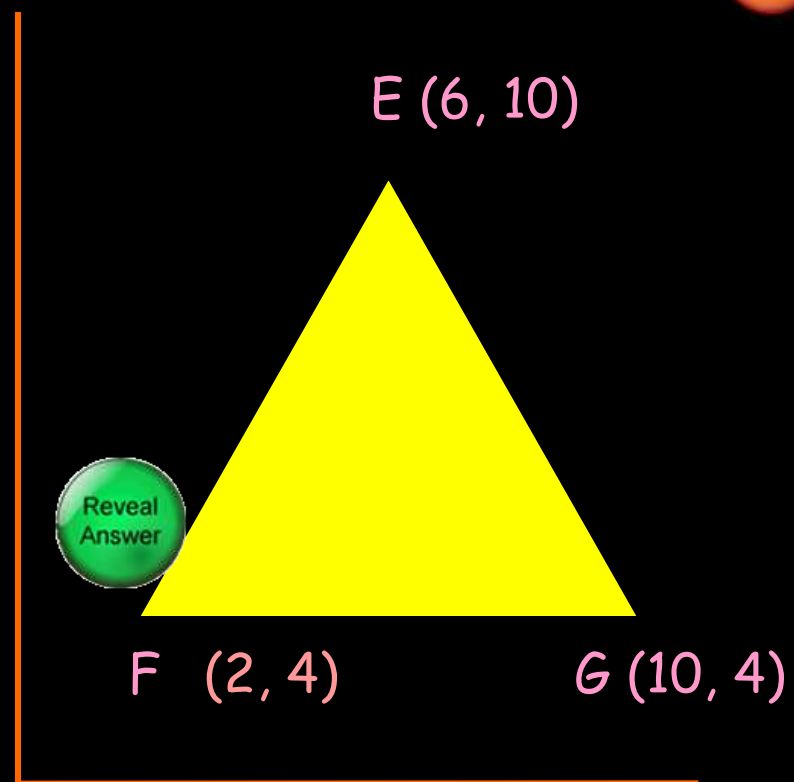
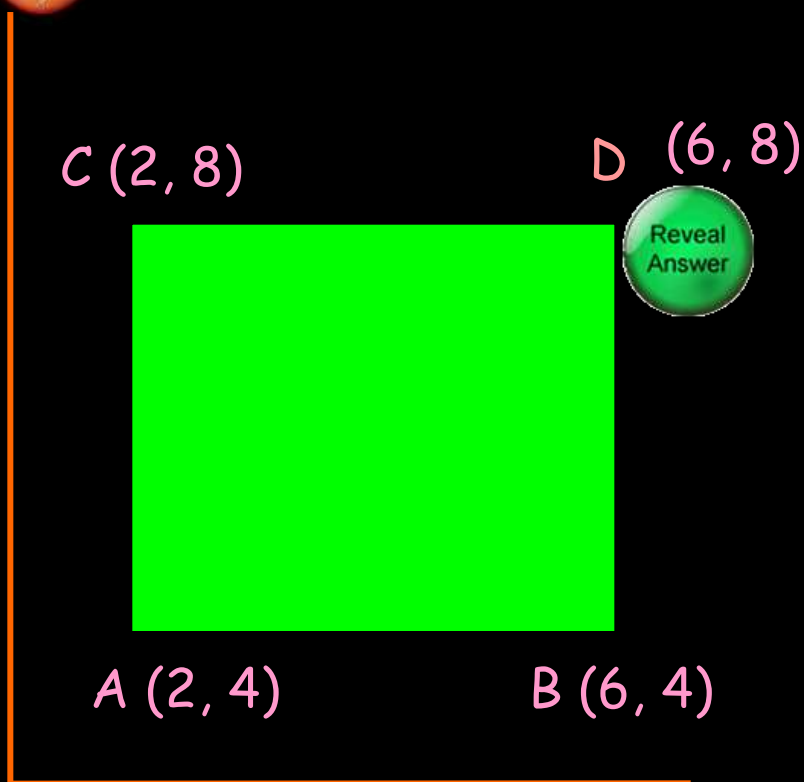
Draw
Shape



Plot these points on the graph paper: Click a coordinate to plot the corner.



What shape does it make?



This shape is a oblong.
What are the co-ordinates of D?

This is an equilateral triangle.
What are the co-ordinates of F?





Co-ordinates in all 4 quadrants

II

This is the second quadrant. Typical co-ordinates might be $(-5,6)$

X

5 squares backwards, 6 squares up

This is the first quadrant. Typical co-ordinates might be $(5,6)$

I

X

5 squares across, 6 squares up

III

This is the third quadrant. Typical co-ordinates might be $(-5,-6)$

X

5 squares backwards, 6 squares down

This is the fourth quadrant. Typical co-ordinates might be $(5,-6)$

IV

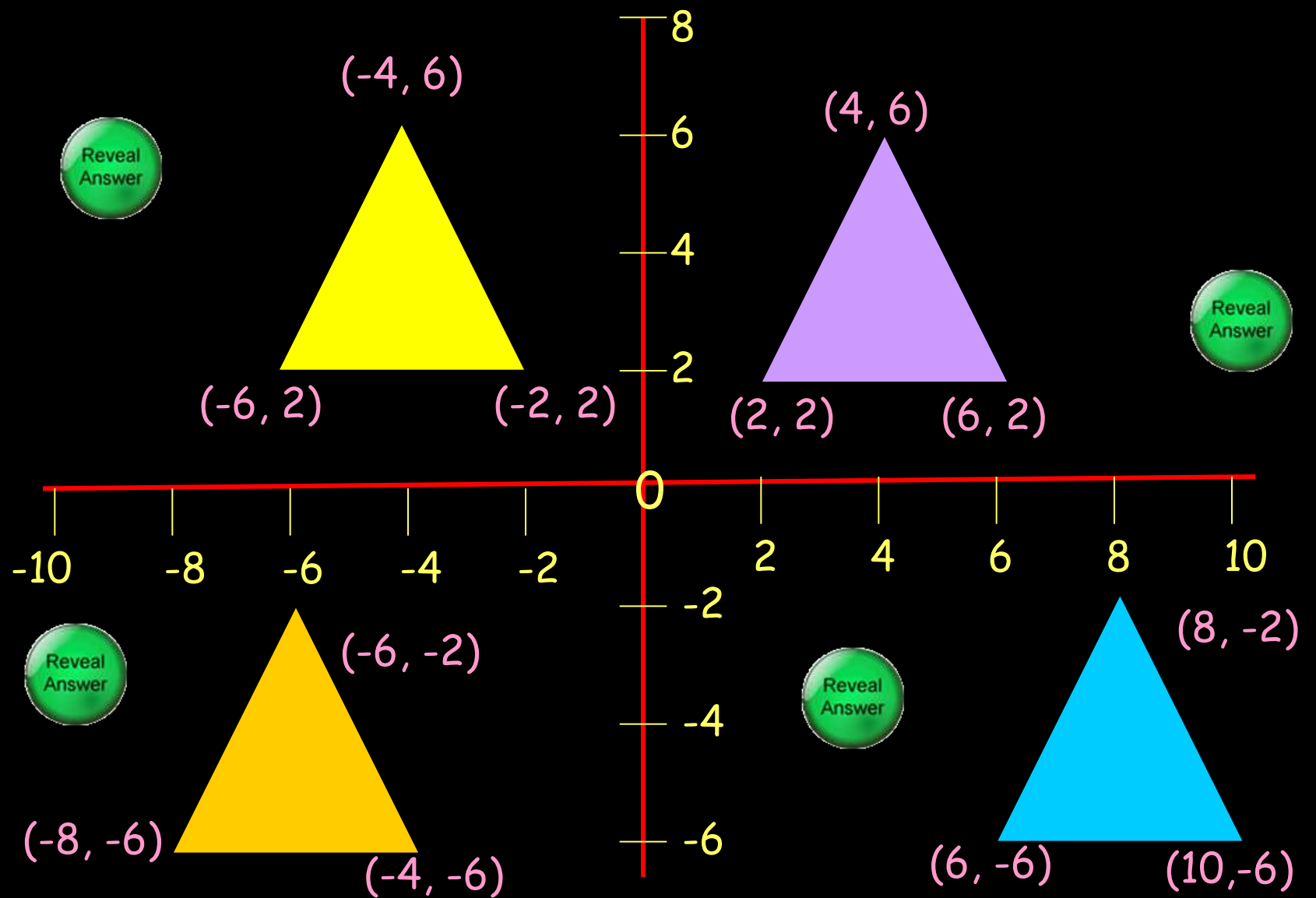
X

5 squares across, -6 squares down



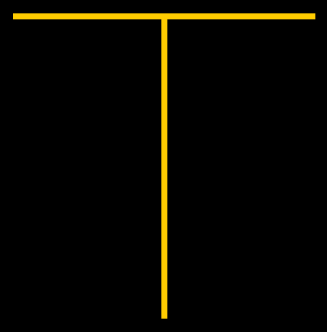


Can you work out the co-ordinates of each corner of the 4 triangles?

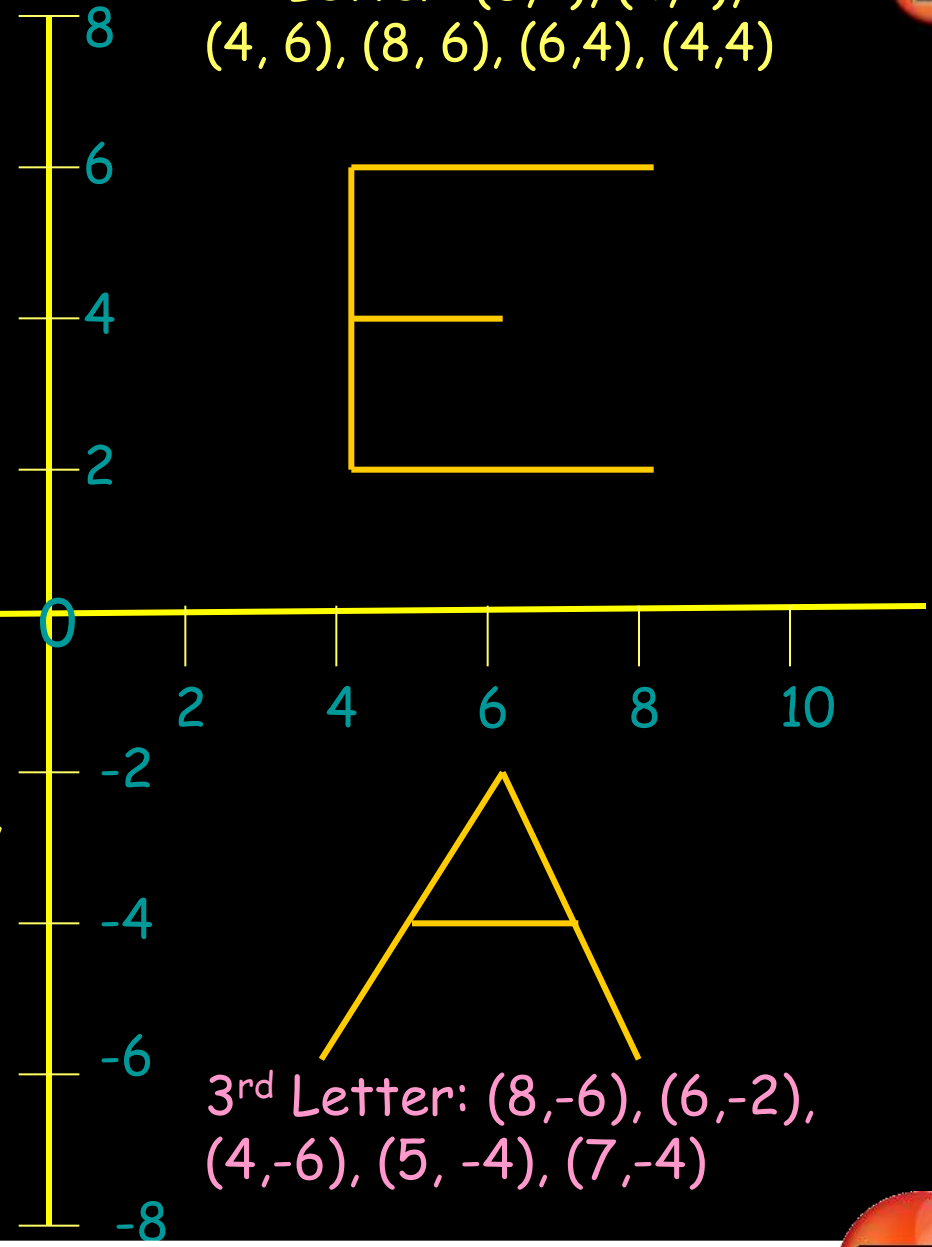
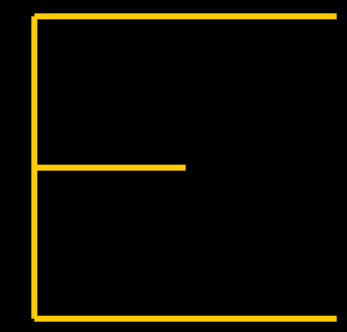




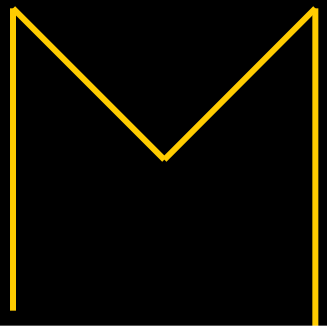
1st Letter: $(-8, 2), (-8, 6), (-10, 6), (-6, 6)$



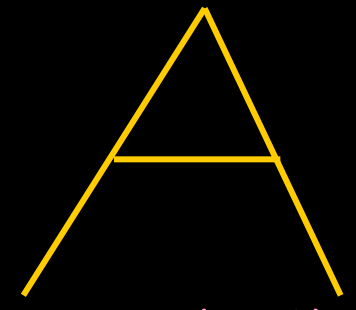
2nd Letter: $(8, 2), (4, 2), (4, 6), (8, 6), (6, 4), (4, 4)$



4th Letter: $(-10, -8), (-10, -4), (-8, -6), (-6, -4), (-6, -8)$



3rd Letter: $(8, -6), (6, -2), (4, -6), (5, -4), (7, -4)$



Plot these points and join them (in order) to reveal a 4 letter word.



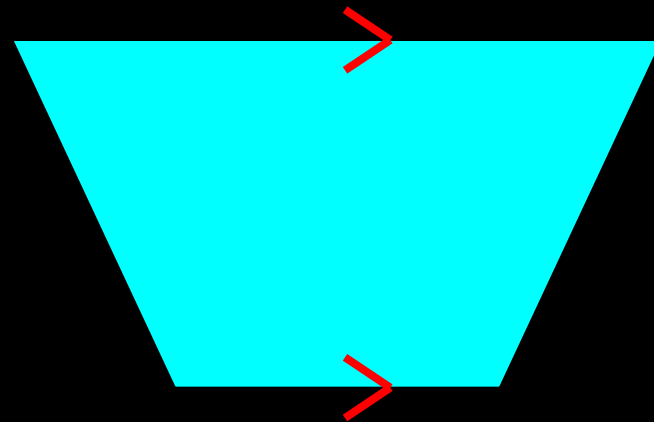
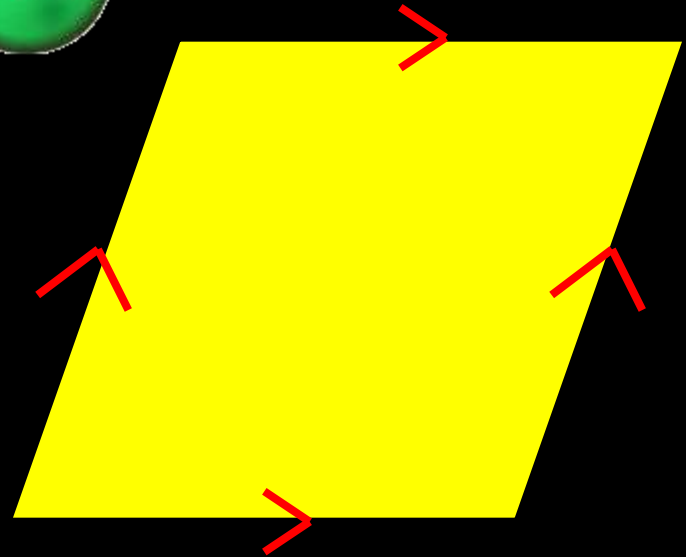
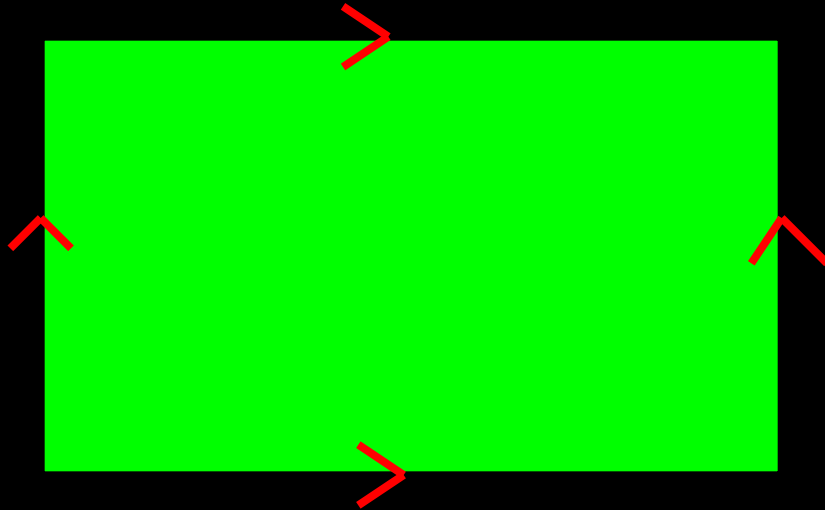


Parallel Lines

A train needs to run on parallel lines, otherwise it wouldn't be very safe!

Parallel lines are lines that are always the same distance apart, and never meet.



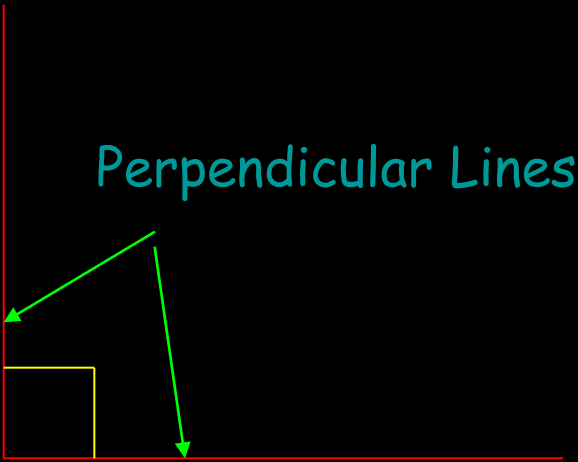


How many parallel lines do these shapes have?





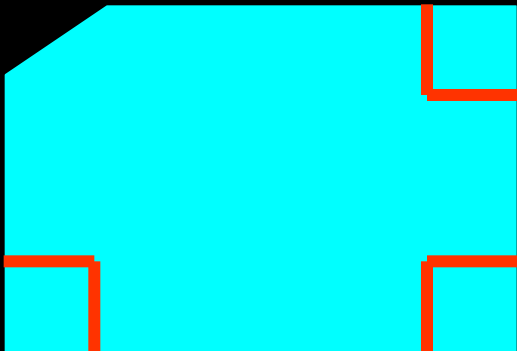
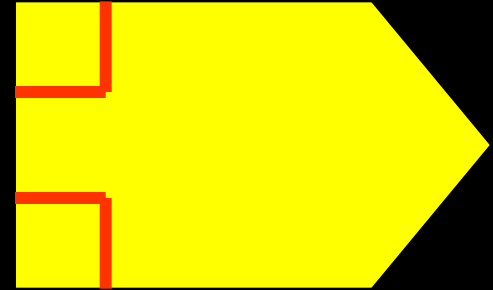
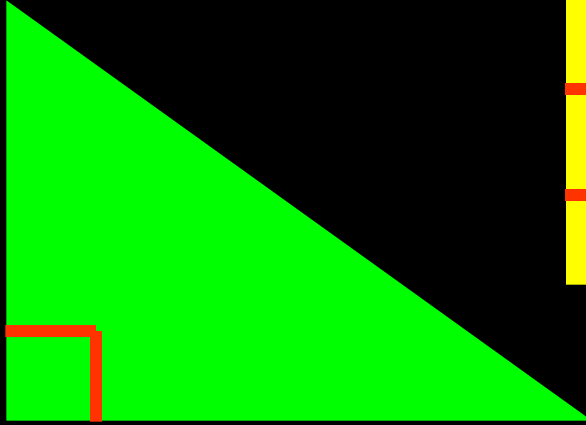
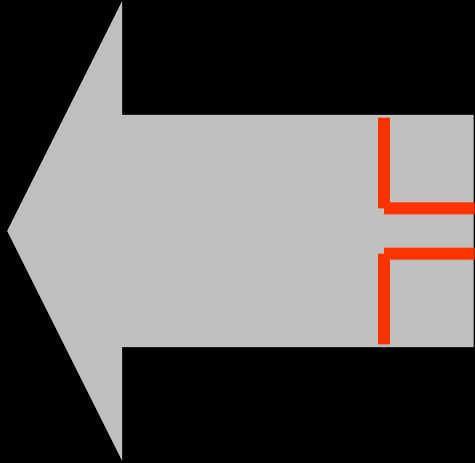
Perpendicular Lines



This oblong has 4 perpendicular lines

Perpendicular Lines are lines that join at right angles (90°)





How many perpendicular lines can you see on these shapes?
Click each shape to reveal the answers

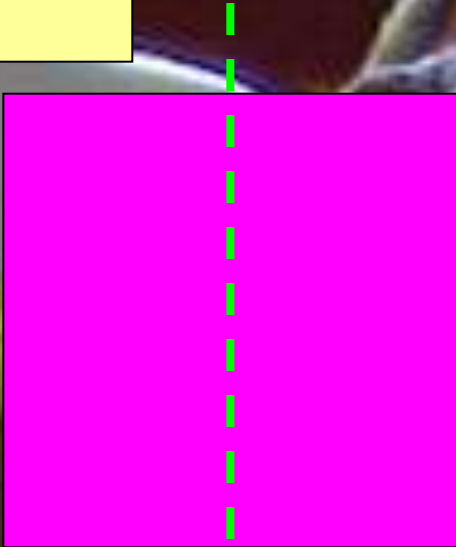




Symmetry

A line of symmetry is where a shape can be divided into two exact equal parts.

A line of symmetry can also be called a mirror line. Either side of the mirror line looks exactly the same.



This is a line of symmetry for a square. Notice that both halves of the square are exactly the same.

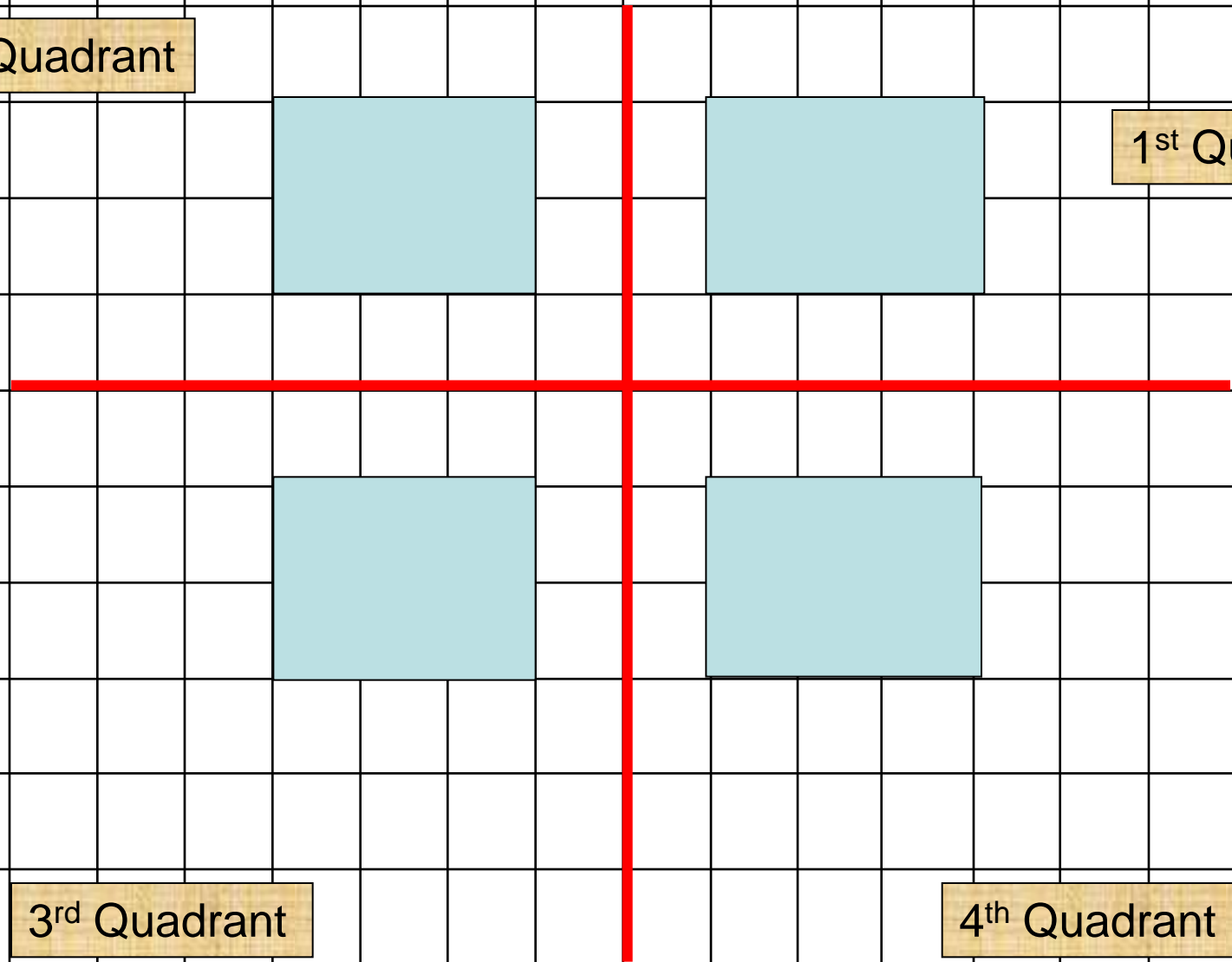




Symmetry Using Horizontal and Vertical Mirror Lines

2nd Quadrant

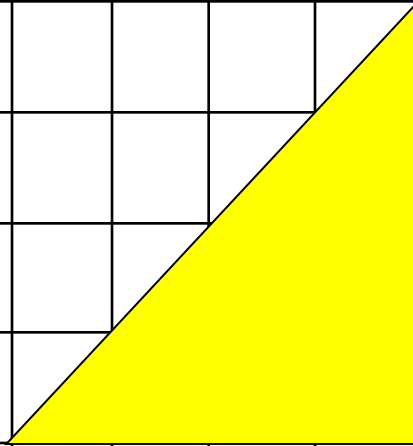
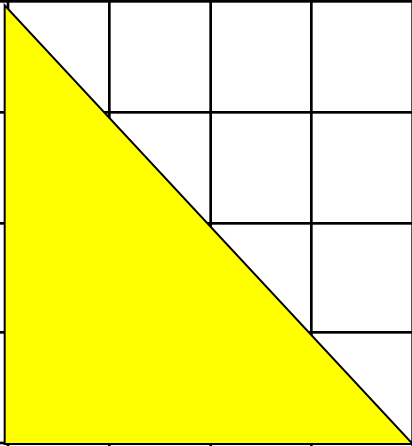
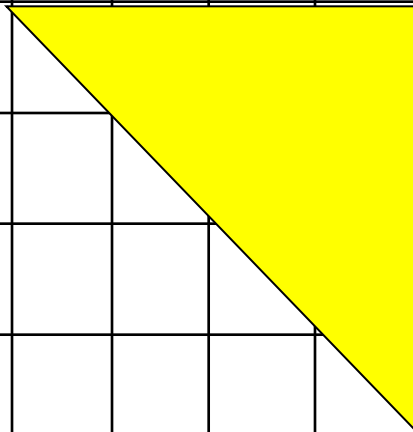
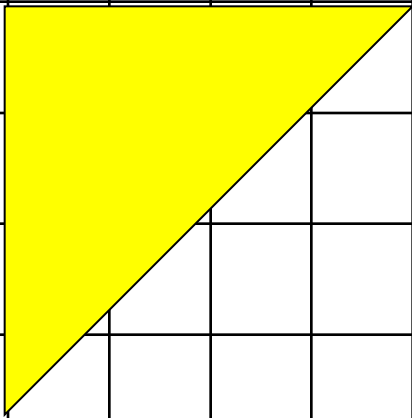
1st Quadrant

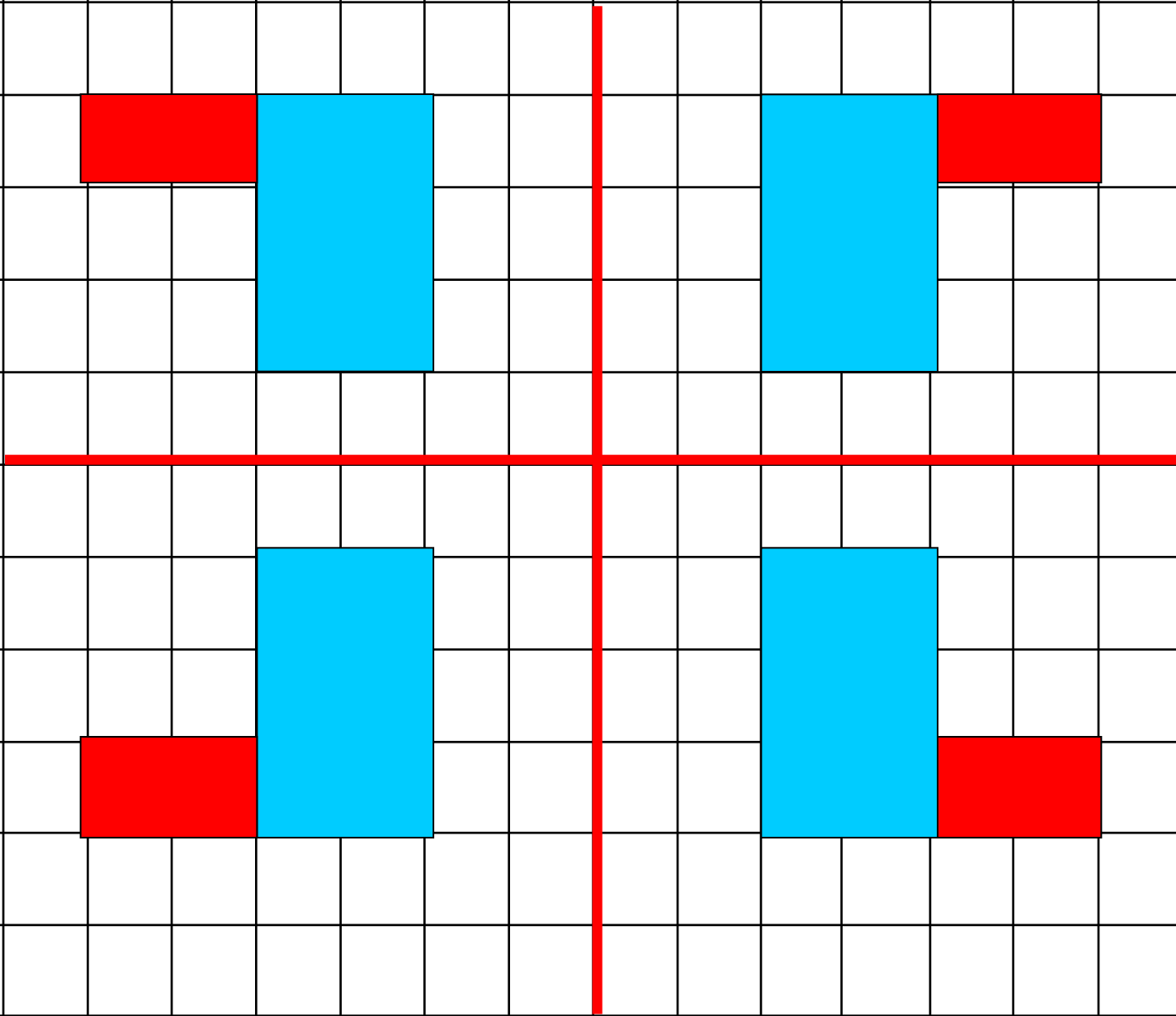


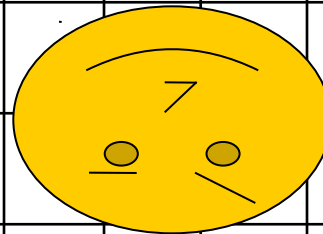
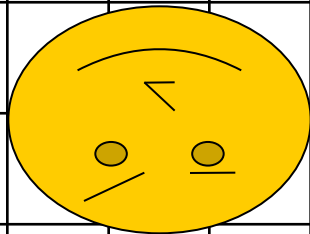
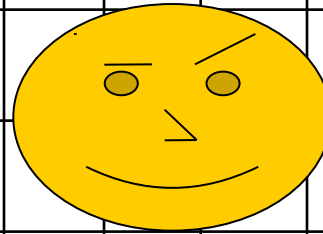
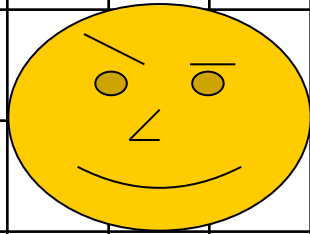
3rd Quadrant

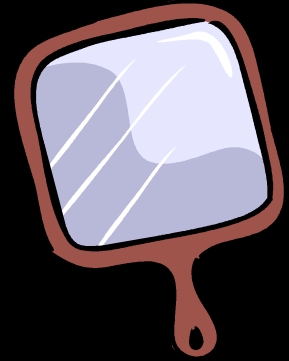
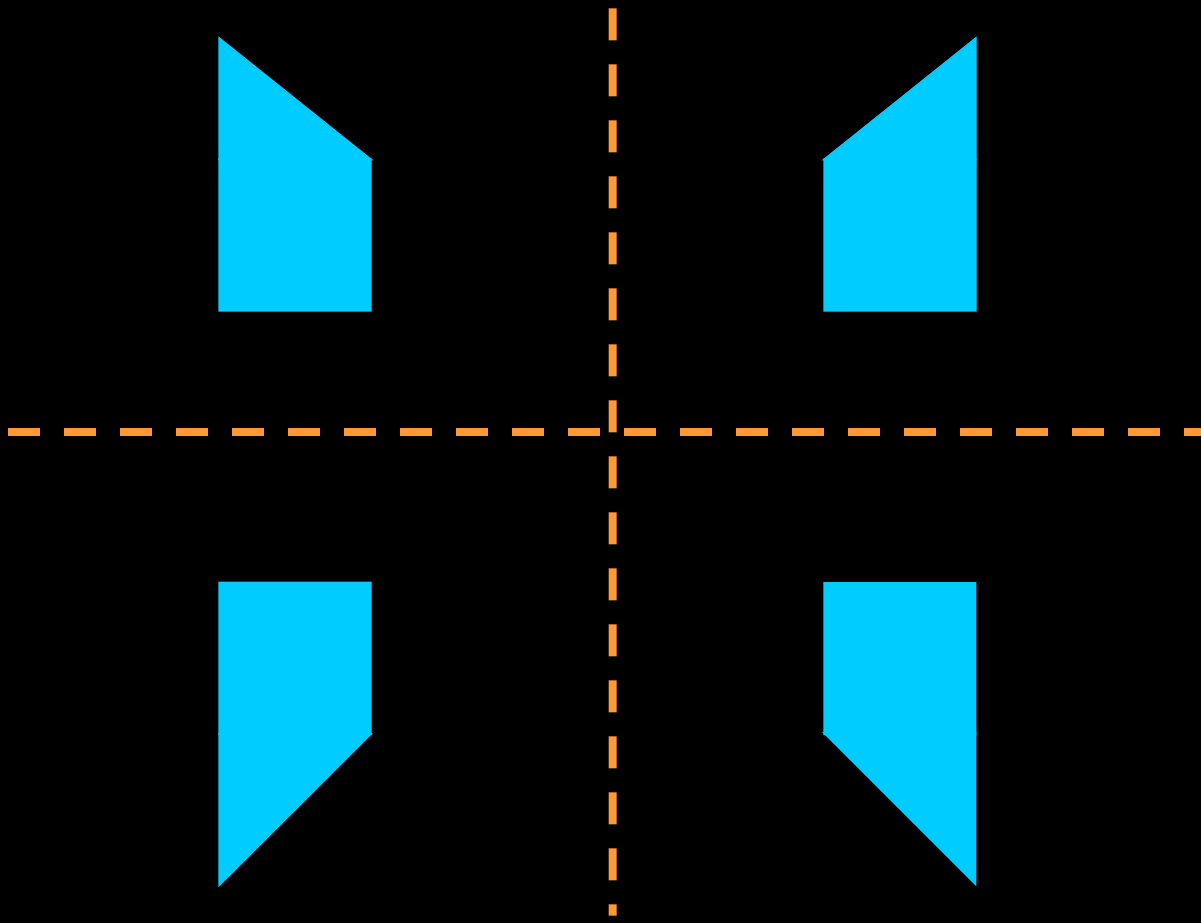
4th Quadrant





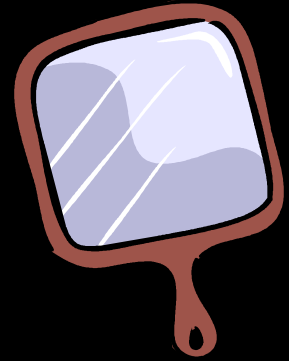
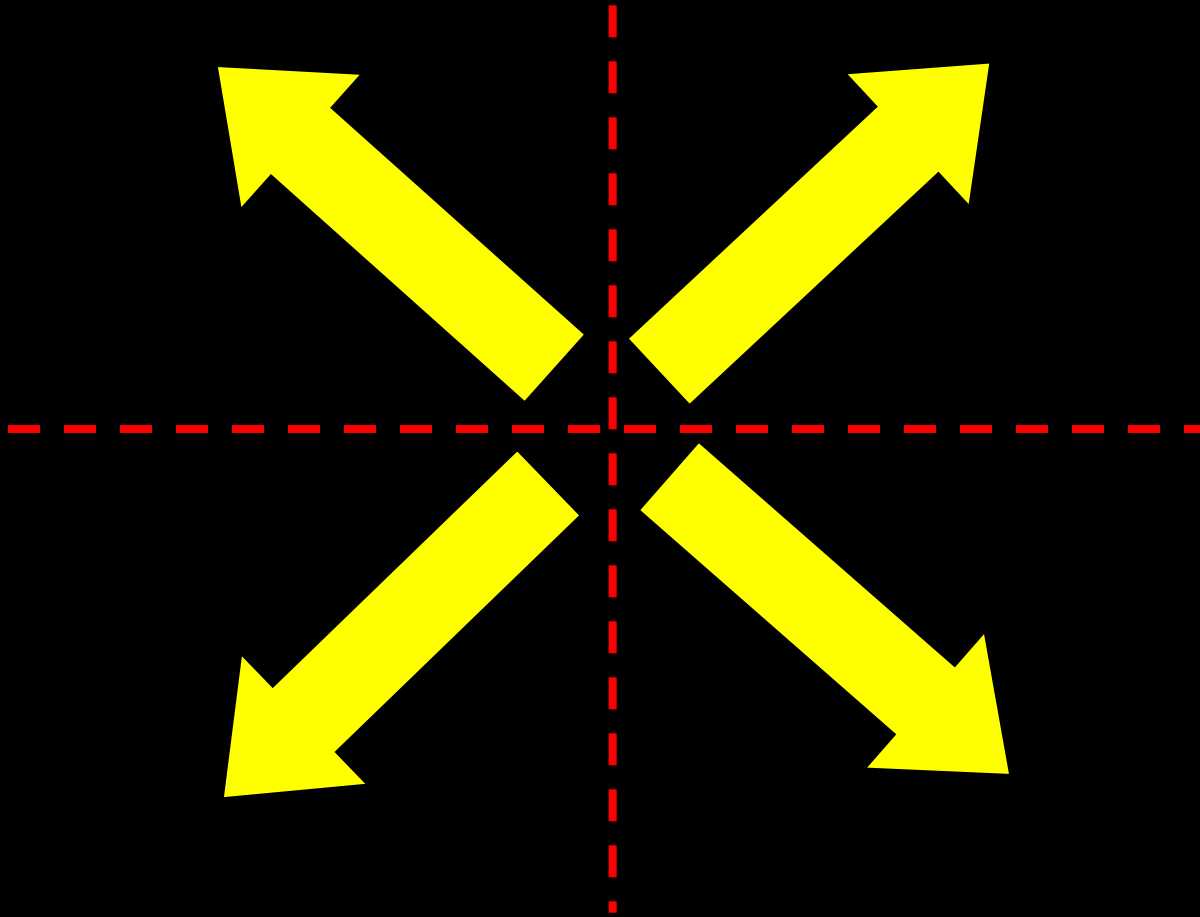






What will this shape look like reflected in the different quadrants?





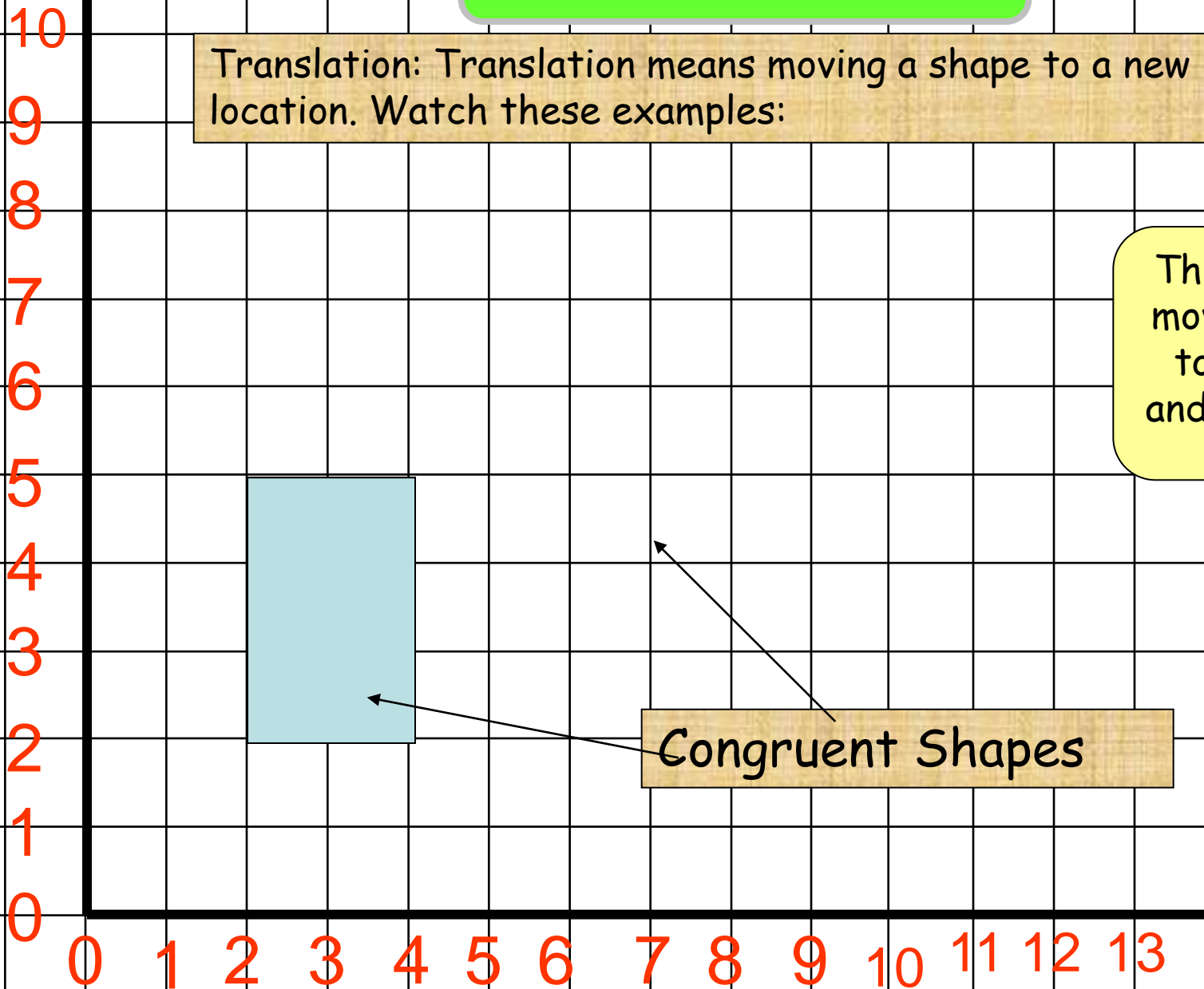
What will this shape look like reflected in the different quadrants?





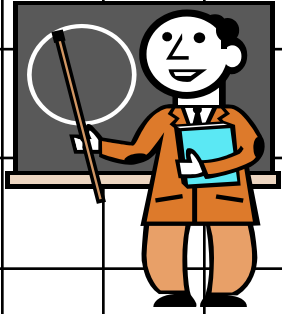
Translation

Translation: Translation means moving a shape to a new location. Watch these examples:



This shape has moved 4 places to the right, and 2 places up.

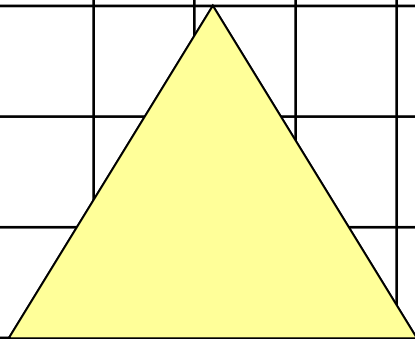
Congruent Shapes



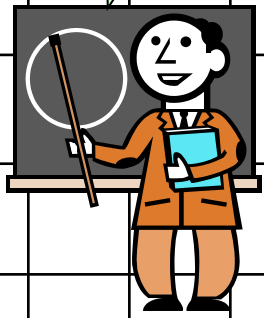


10
9
8
7
6
5
4
3
2
1
0

0 1 2 3 4 5 6 7 8 9 10 11 12 13



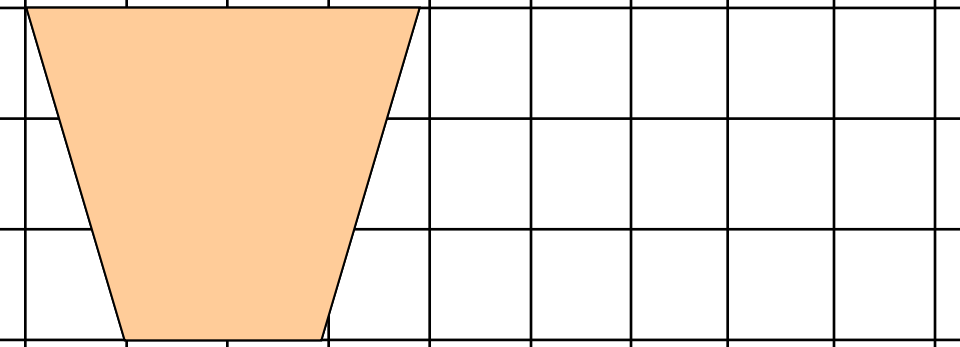
This shape will be translated 6 places to the right, and 2 places down. What will it look like?



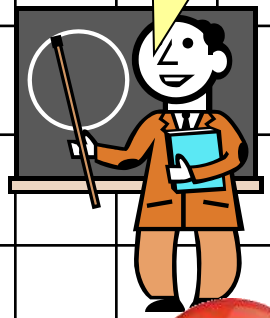


10
9
8
7
6
5
4
3
2
1
0

0 1 2 3 4 5 6 7 8 9 10 11 12 13



This shape will be translated 2 places to the right, and 4 places up.

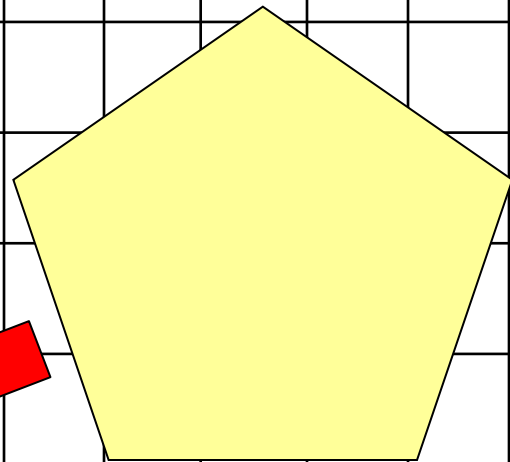
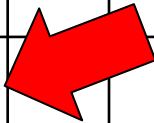
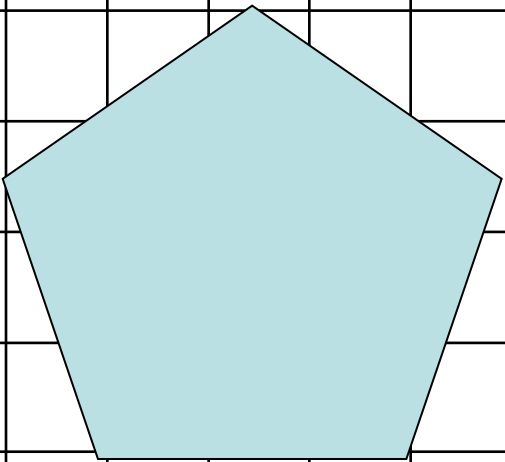




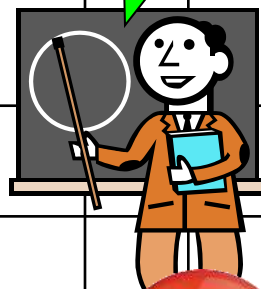
10
9
8
7
6
5
4
3
2
1
0

0 1 2 3 4 5 6 7 8 9 10 11 12 13

6 squares left,
and 1 square down.



What has this
shape been
translated by?

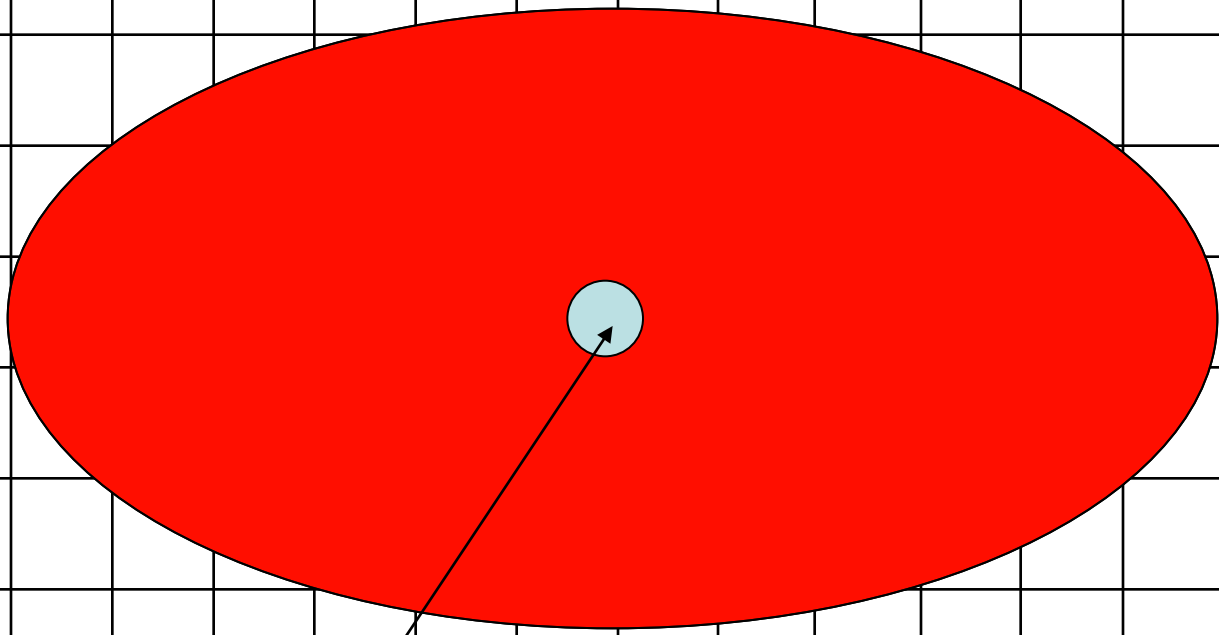




Rotational Symmetry

A complete turn
(360°)

90° Rotation Clockwise

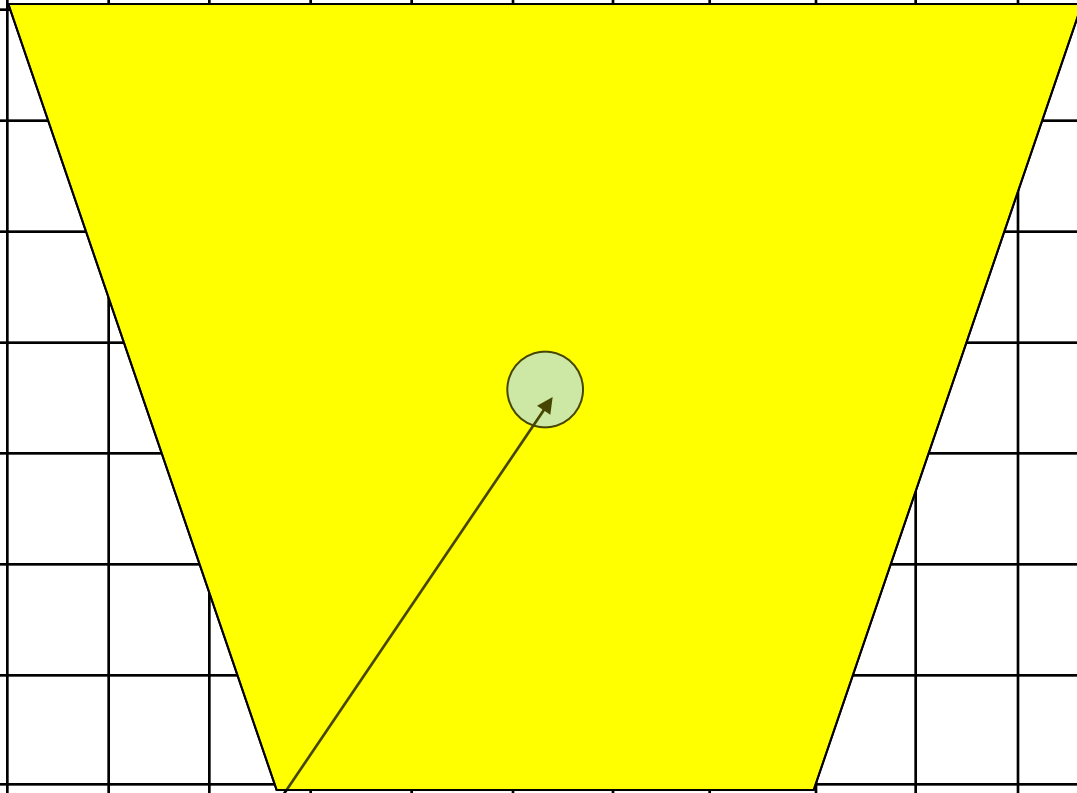


Centre of Rotation

270° Rotation Clockwise

180° Rotation
Clockwise





Centre of Rotation



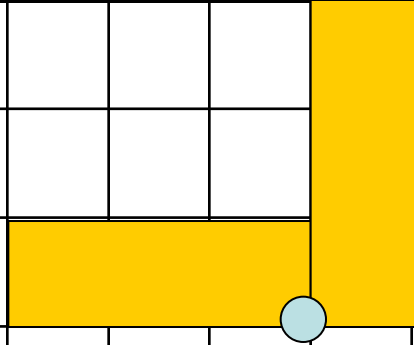


We are going to rotate this rectangle 90° clockwise.

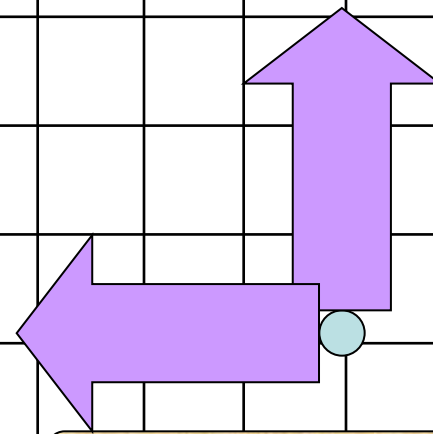


Centre of Rotation

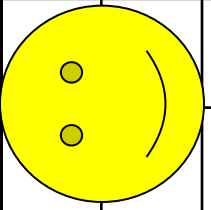
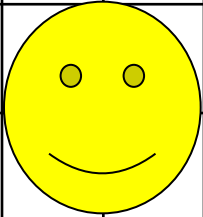




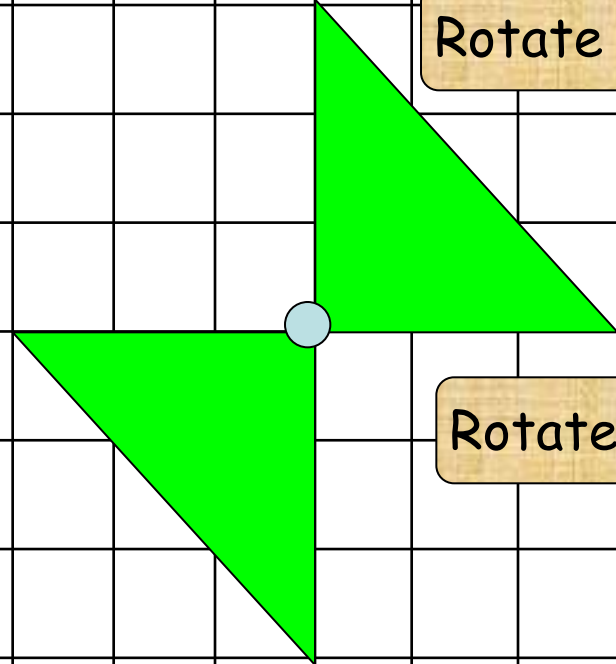
Rotate 90° Clockwise



Rotate 90° Anti-Clockwise



Rotate 90° Anti-Clockwise



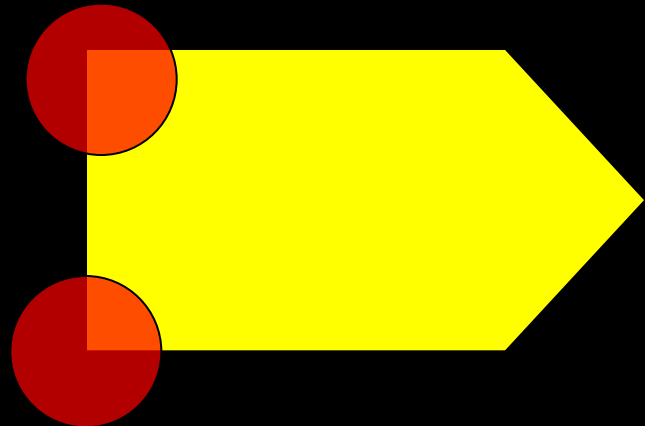
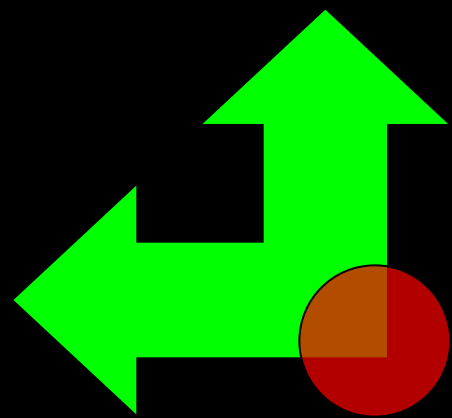
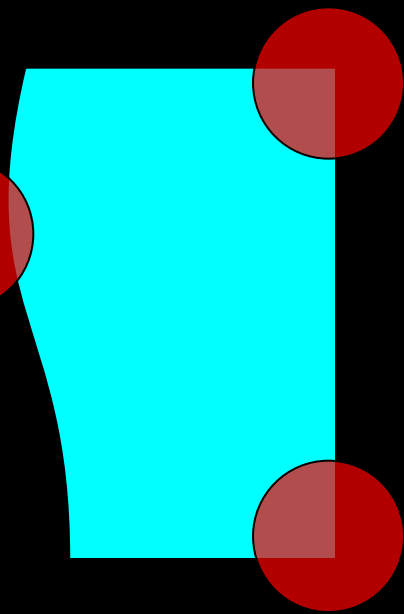
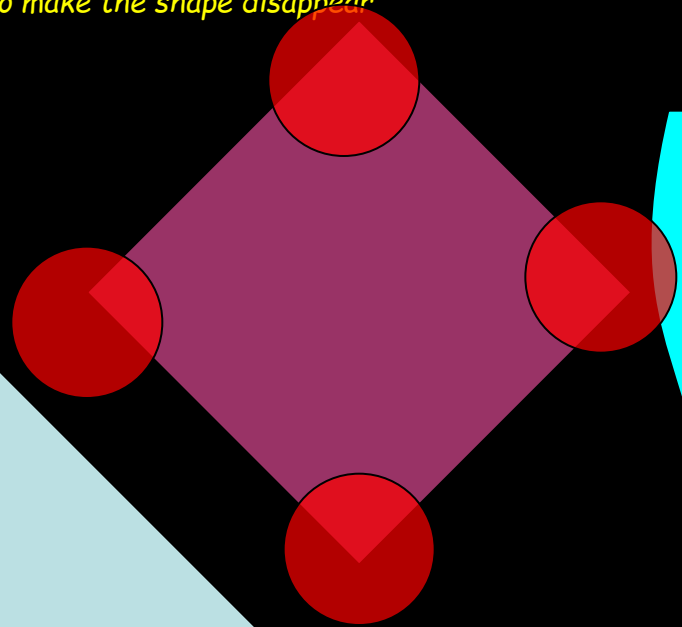
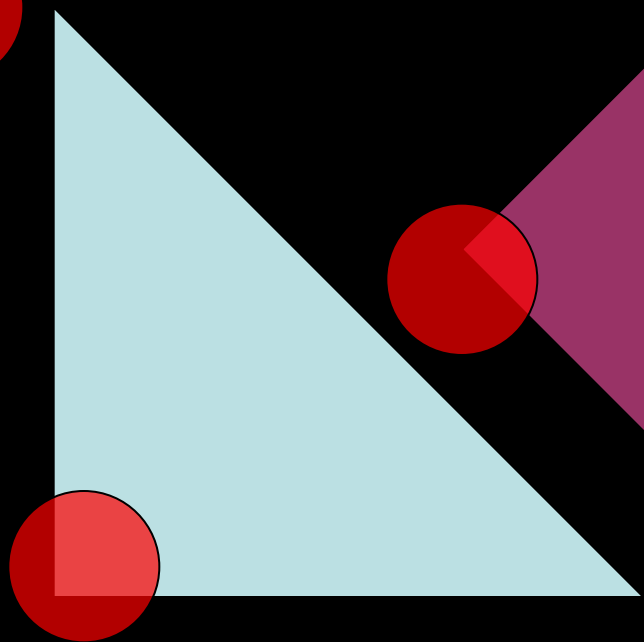
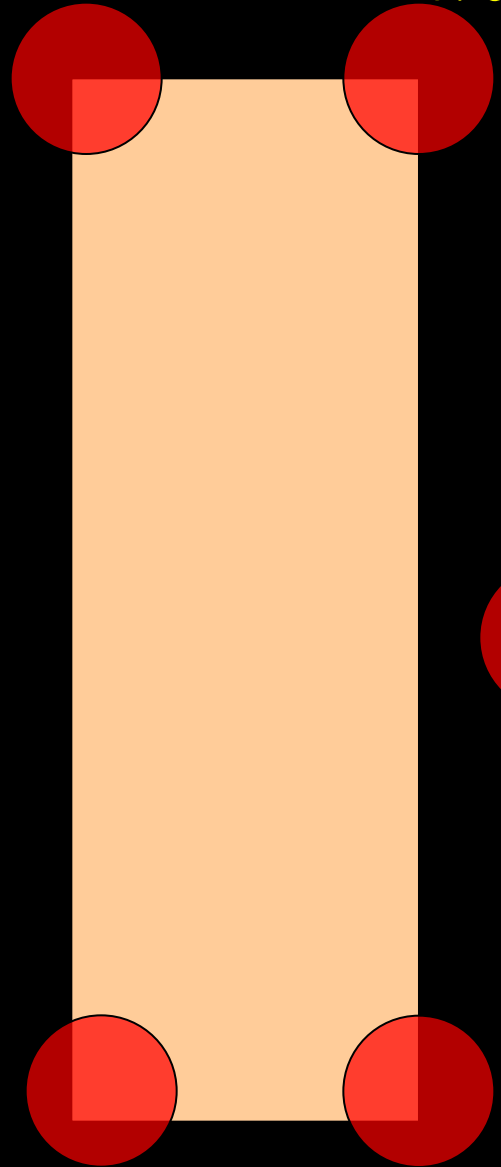
Rotate 180° Clockwise

Click on each shape to reveal the answer



Finding Right Angles

Click on a shape to reveal all its right angles!
Click again to make the shape disappear





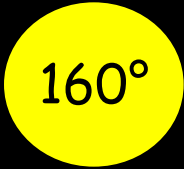
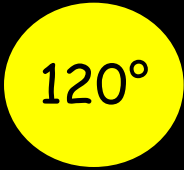
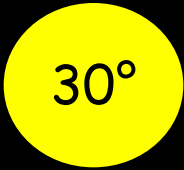
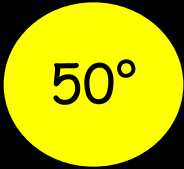
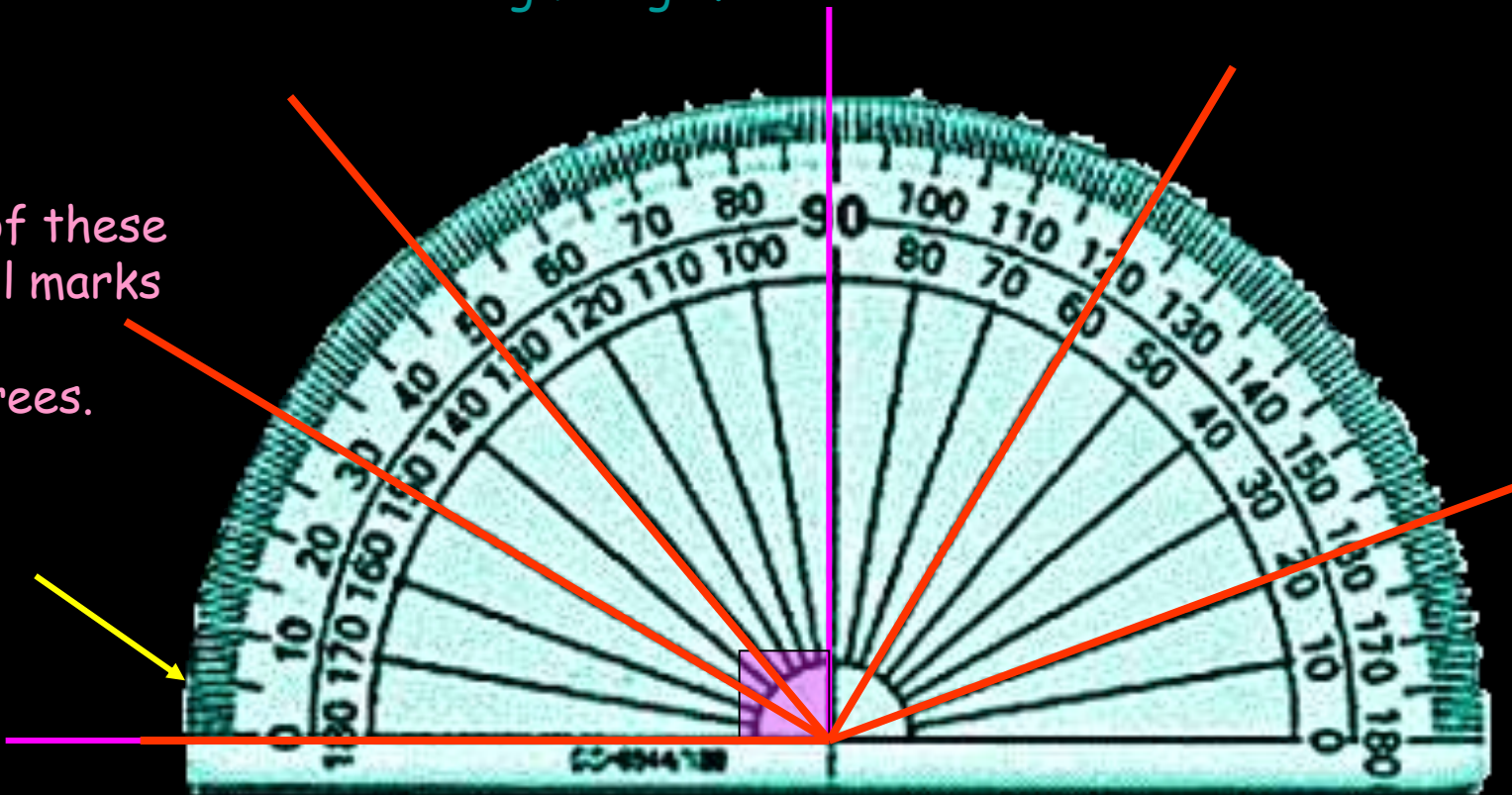
Measuring Angles

This is a protractor! It is used to measure angles.

Click an angle to see what it looks like:

There are 90° in a right angle.

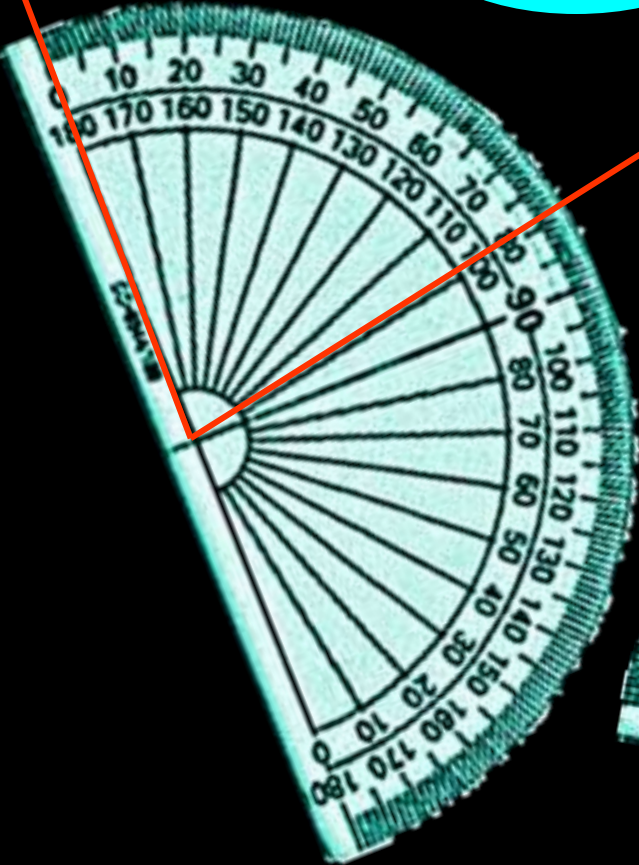
All of these small marks are degrees.



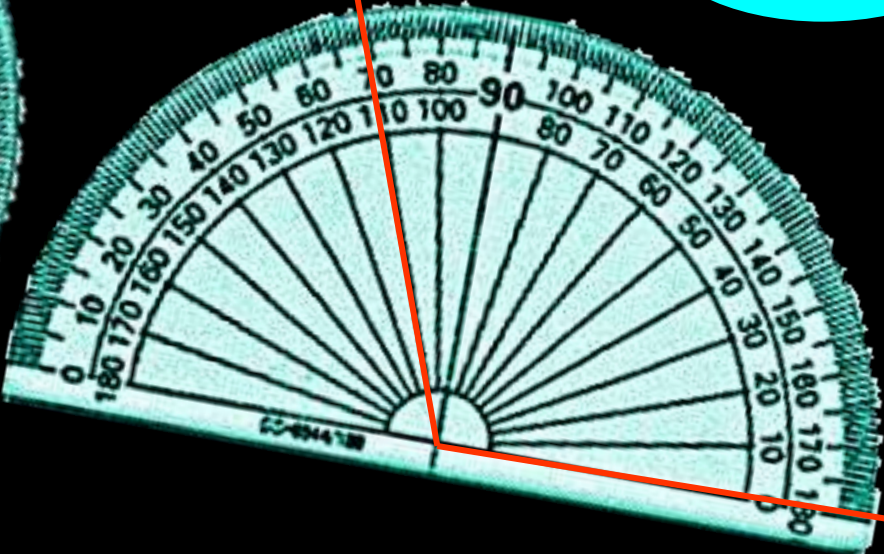


Measuring Angles

Show/Hide
Protractor



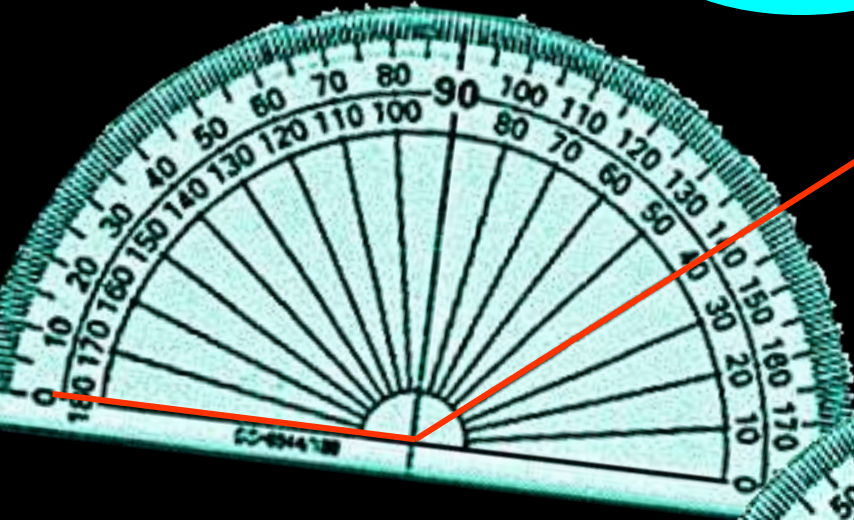
Show/Hide
Protractor



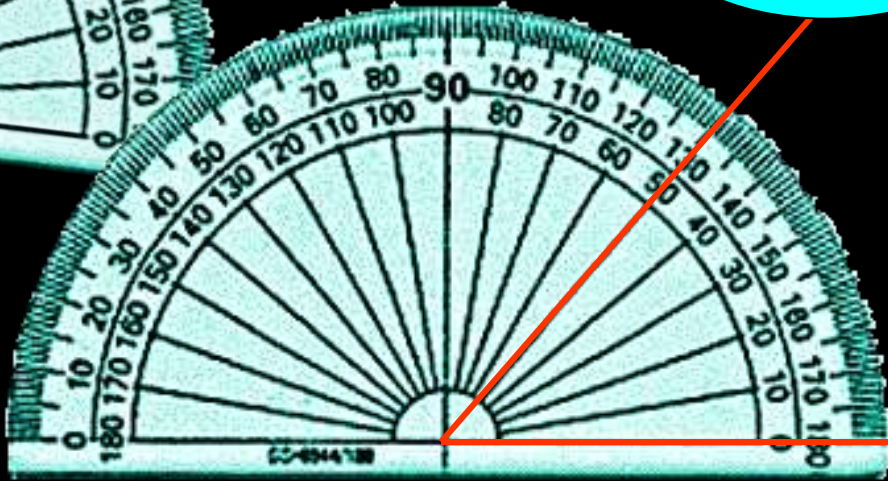


Measuring Angles

Show/Hide
Protractor



Show/Hide
Protractor



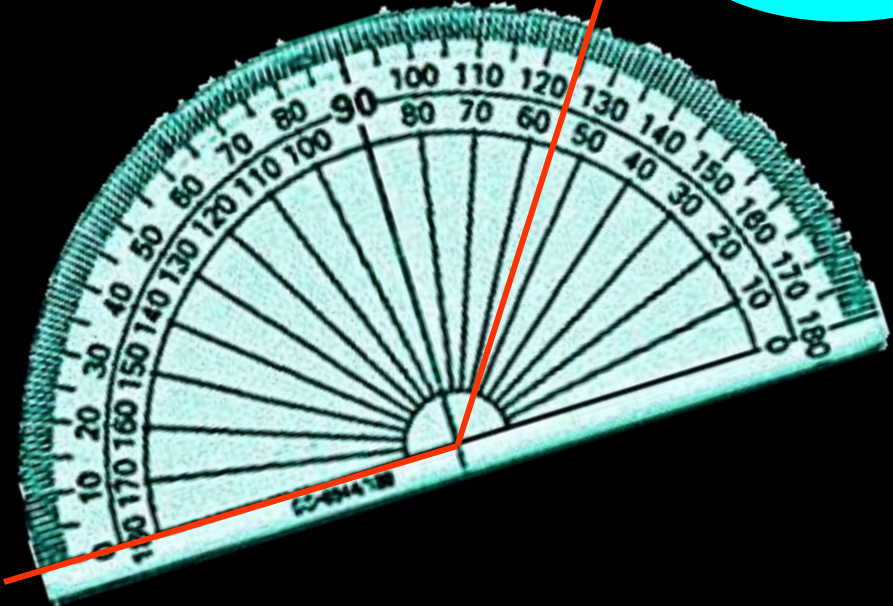


Measuring Angles

Show/Hide
Protractor



Show/Hide
Protractor





Can you Estimate the Angles?

Click on the angles to match them to the corners

20°

160°

60°

125°

85°

