

At home materials Guidance Pack Year 6 Weeks 5-9

Week 5	Pack 1: Angles and shapes Session A) 90 and 180 degrees Session B) 360 degrees Session C) Describing polygons Session D) Comparing shapes
Week 6	Pack 2: Triangles Session A) Creating triangles Session B) Triangle symmetry Session C) Describing triangles Session D) Angles in triangles
Week 7	Pack 3: Quadrilaterals Session A) Creating quadrilaterals Session B) Quadrilateral symmetry Session C) Angles in quadrilaterals Session D) Describing quadrilaterals
Week 8	Pack 4: Area Session A) What is area? Session B) Area and arrays Session C) Squared units Session D) Exploring area
Week 9	Pack 5: Positive and negative numbers Session A) Negative numbers in context Session B) Extending the number line Session C) Comparing numbers Session D) Greater than and less than



Timing

Each session is 30 minutes

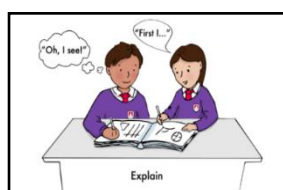
20 minute Talk Task and 10 minute independent activity

Session guidance

Get talking and grow your language.

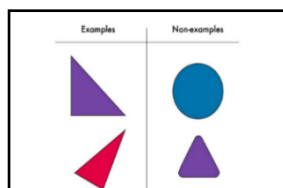
Use equipment, manipulatives, models and images to show and explain.

Challenge **yourself** to think mathematically. Use the Prompts for Thinking listed below to help build up habits in the way you think about mathematical situations.



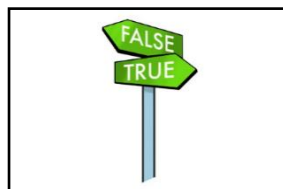
Reason it

Explain how you know. Focus on reasons rather than answers. What could you say, do, draw or write to help someone else understand?



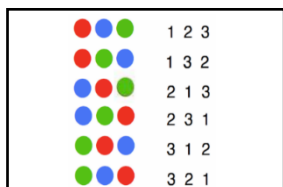
Generate examples and non-examples

What are the important features? What features are not important (e.g. colour)?



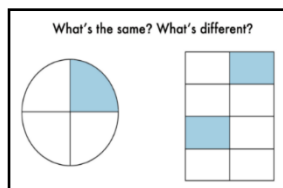
True or false?

If true, give examples to support your answer. If false, give a counter example.



Find all possibilities

Have you found all the possible answers? How do you know? Did you work systematically?



What's the same? What's different?

Compare and contrast and look for connections. How many different answers can you give?



Always, sometimes or never true?

Give examples to show if the statement is always, sometimes or never true. How do you know?

At home materials

Pack 1: Angles and shapes

Session A) 90 and 180 degrees

Session B) 360 degrees

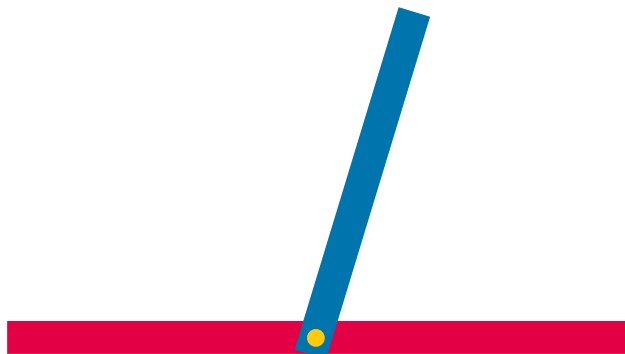
Session C) Describing polygons

Session D) Composing shapes



Pack 1 Session A

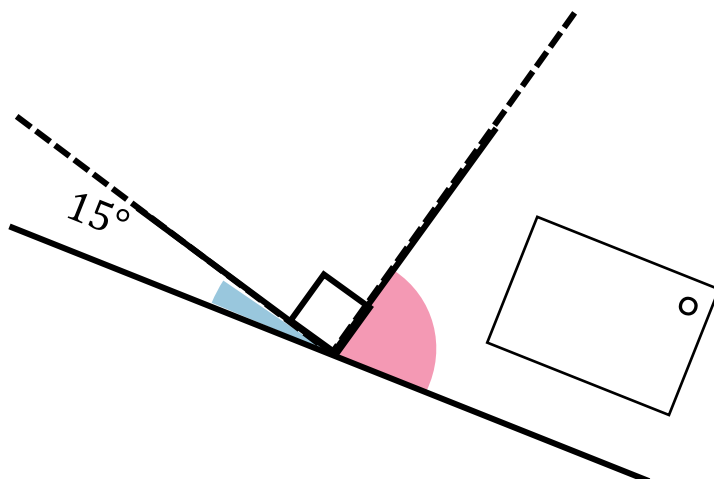
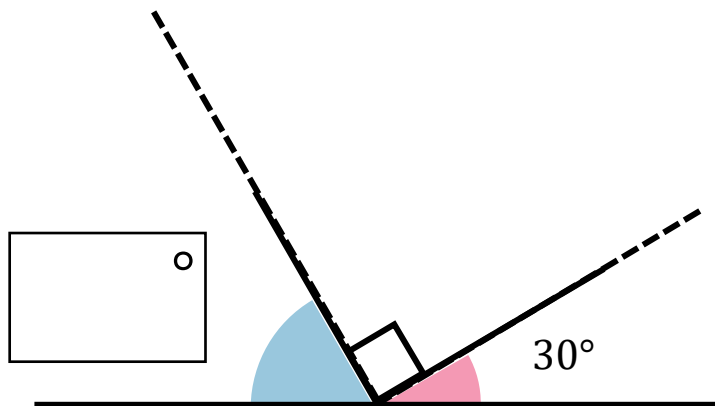
Talk Task: 90° and 180°



I can show two acute angles at the same time

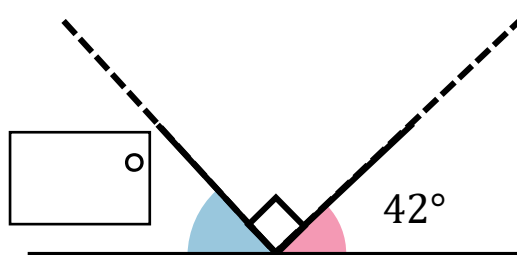
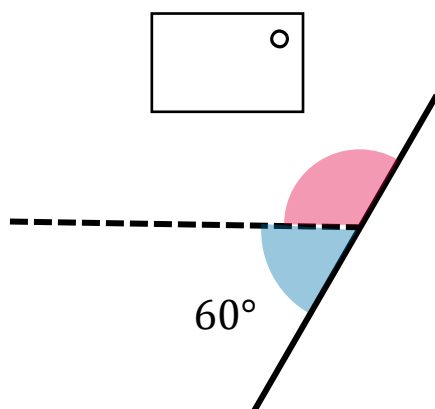
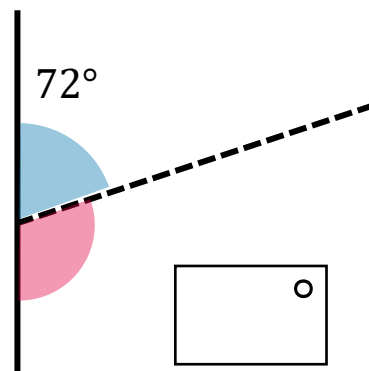
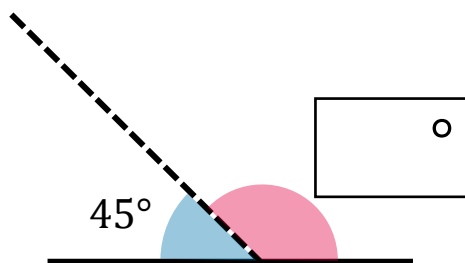
I can show two obtuse angles at the same time

I can show an obtuse angle and an acute angle at the same time



Pack 1 Session A
Activity: 90° and 180°

1) Calculate the missing angles



2) Draw a line to show approximately the angles

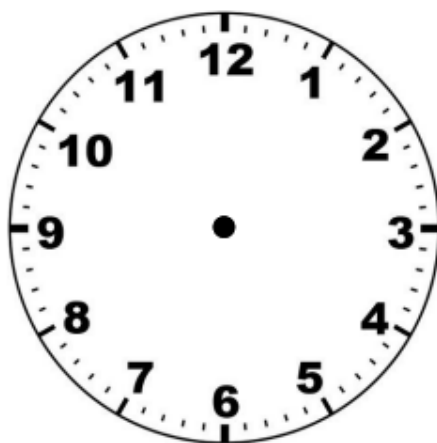
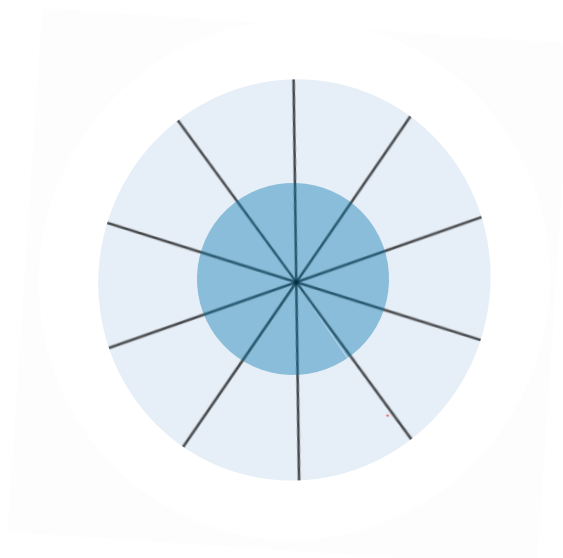
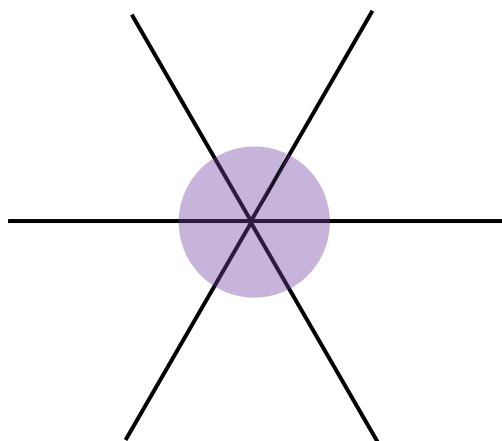
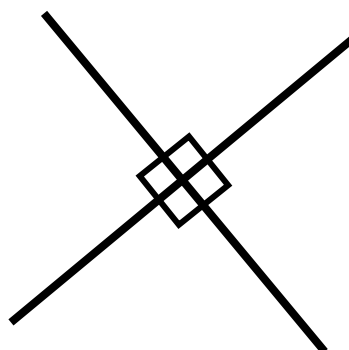
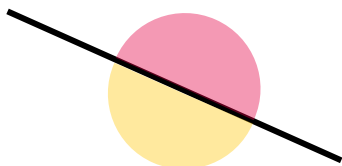
a) 80° and 100°

b) 20° and 160°



Pack 1 Session B

Talk Task: 360°

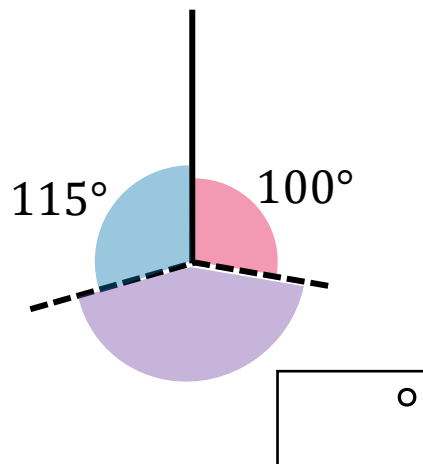
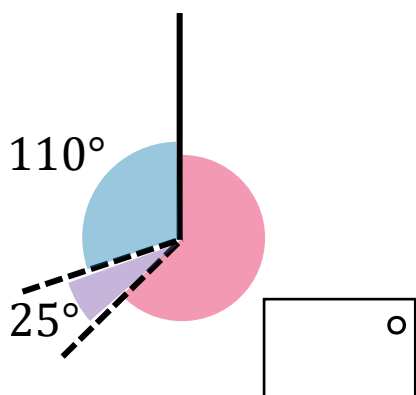
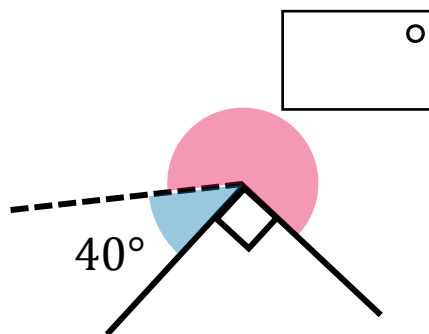
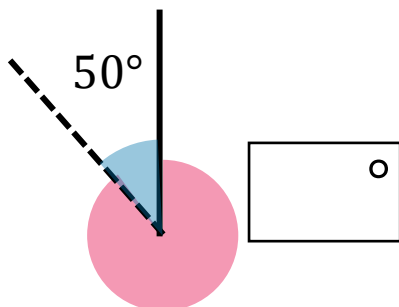


What other ways can you find to split 360°?

Pack 1 Session B

Activity: 360°

1) Calculate the value of the missing angles



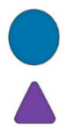
2) Sketch and label diagrams approximately showing the angles

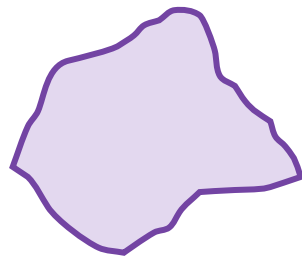
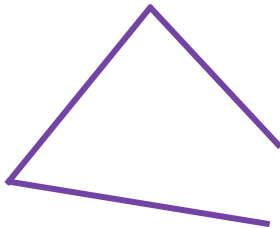
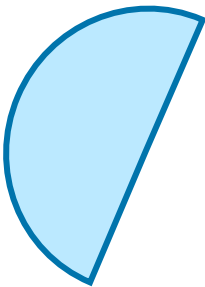
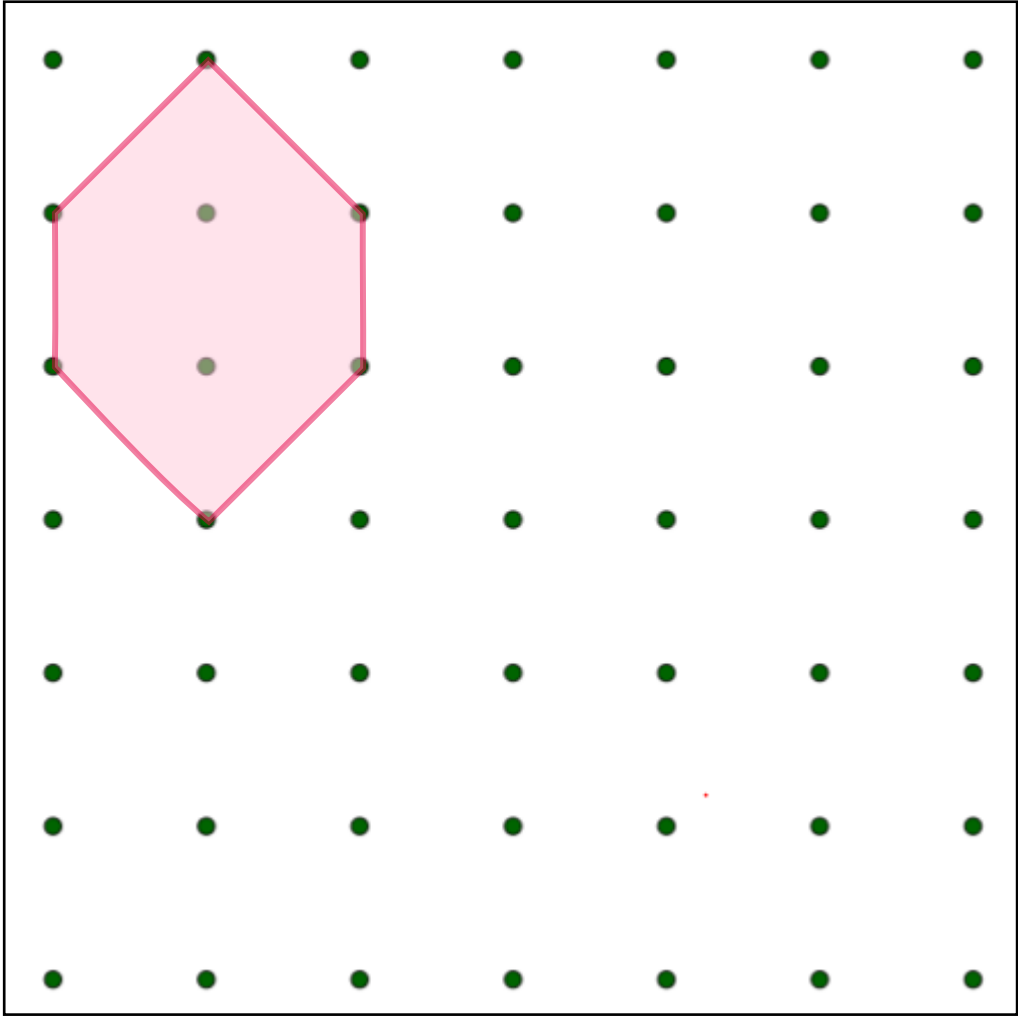
a) 160° and 200°

b) 90° , 120° and 150°

Pack 1 Session C

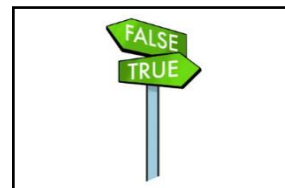
Talk Task: Describing polygons

Examples	Nonexamples
	

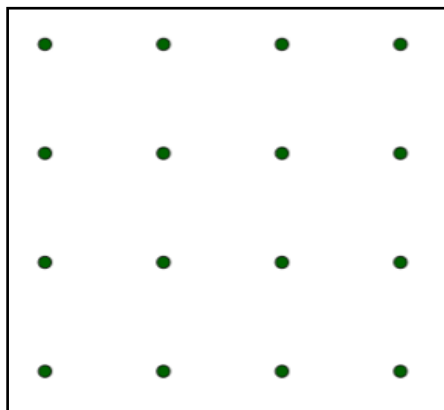


Pack 1 Session C

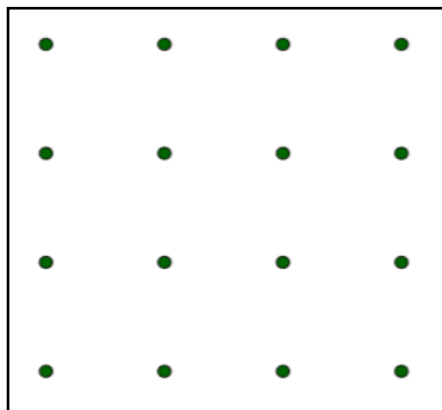
Activity: Describing polygons



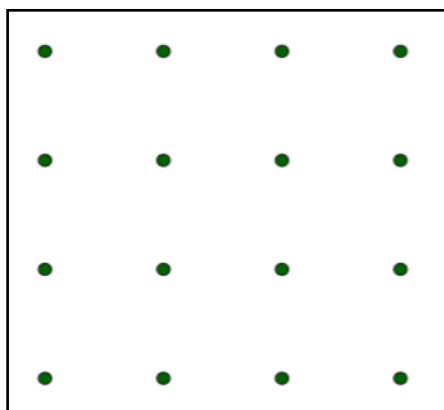
- 1) Is each one true or false? Show an example or if you think it is false, show how close you can get.



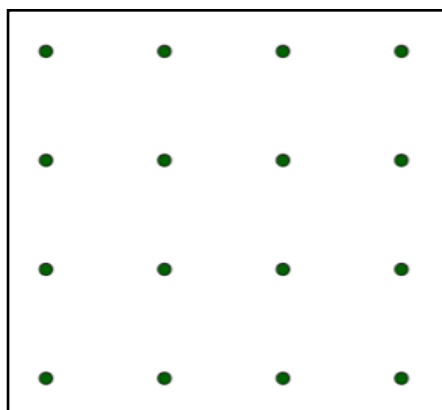
I can make a pentagon
with two right angles



I can make a quadrilateral
with three acute angles

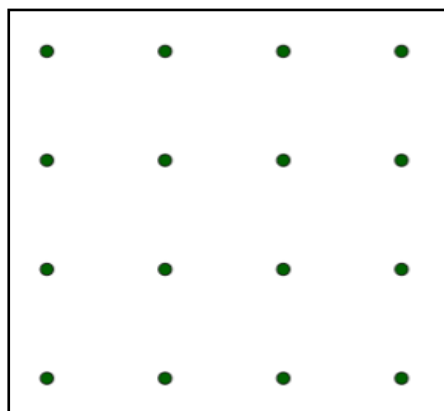


I can make a hexagon
with two right angles

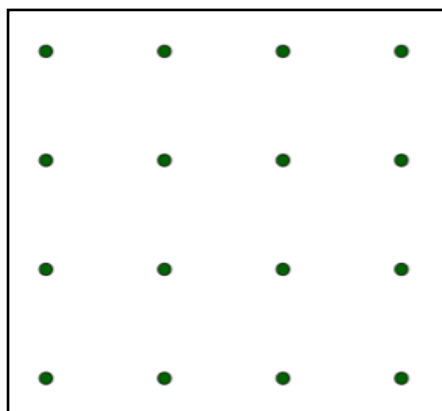


I can make a triangle
with an acute angles

- 2) Write your own statements. One true and one false.



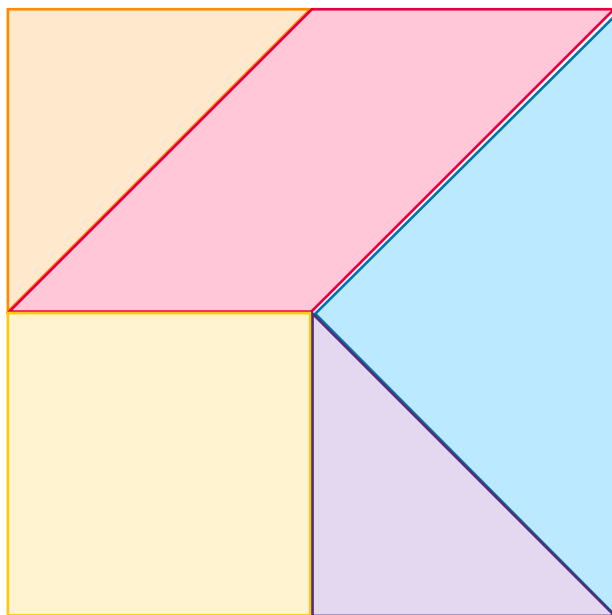
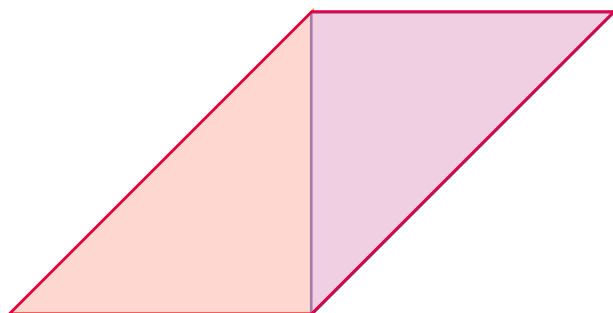
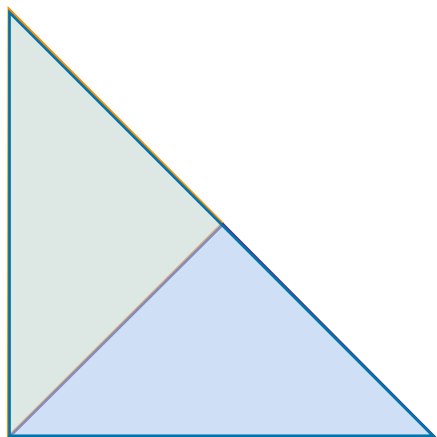
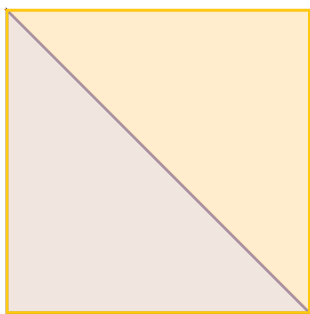
I can make _____



I can make _____

Pack 1 Session D

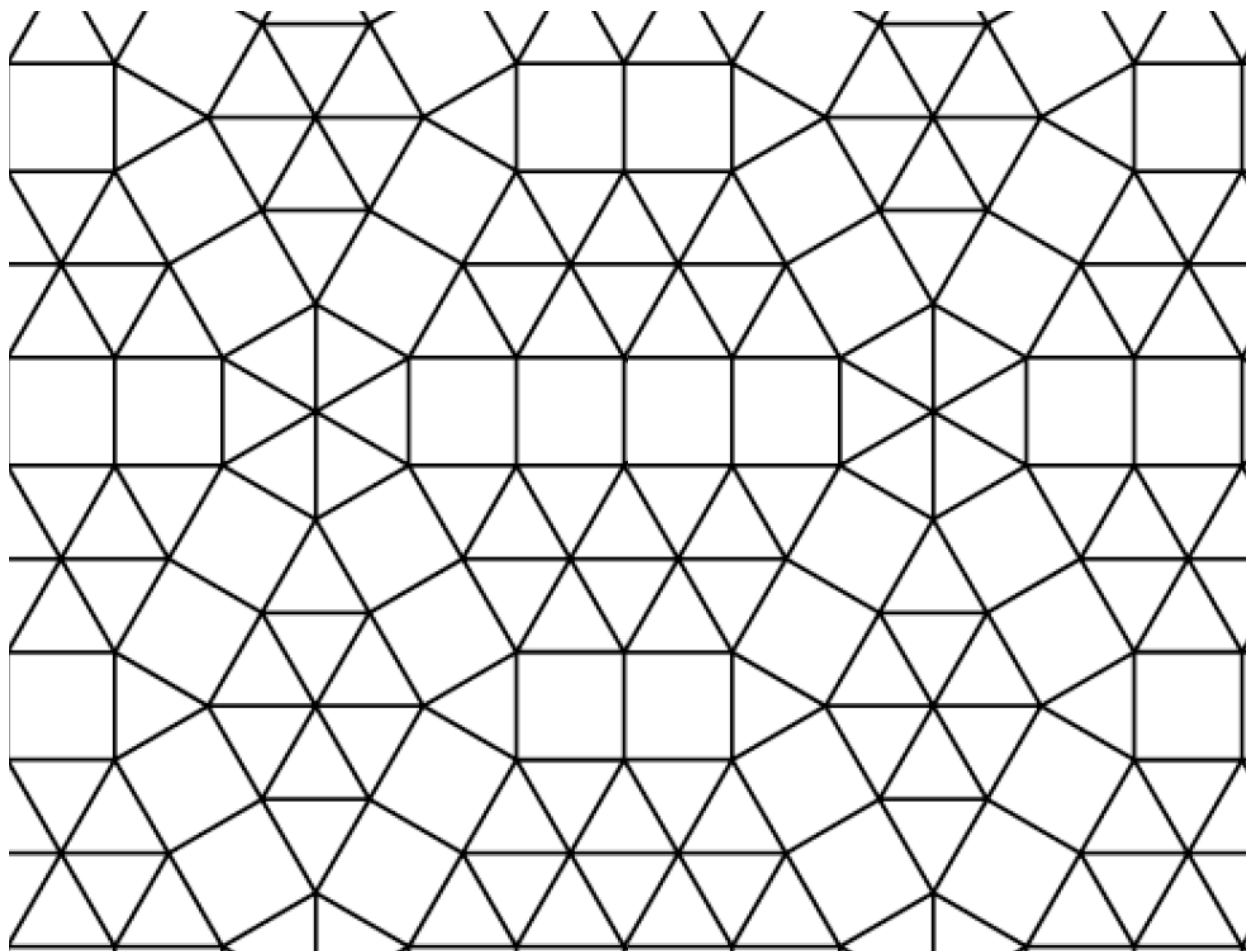
Talk Task: Composing shapes



Pack 1 Session D

Activity: Composing shapes

Squares and equilateral triangles have been used to make a pattern. How many different shapes can you find in the pattern? Shade some in.



Write the names of the shapes you found.
What can you write about each shape?



At home materials

Pack 2: Triangles

Session A) Creating triangles

Session B) Triangle symmetry

Session C) Describing triangles

Session D) Angles in triangles

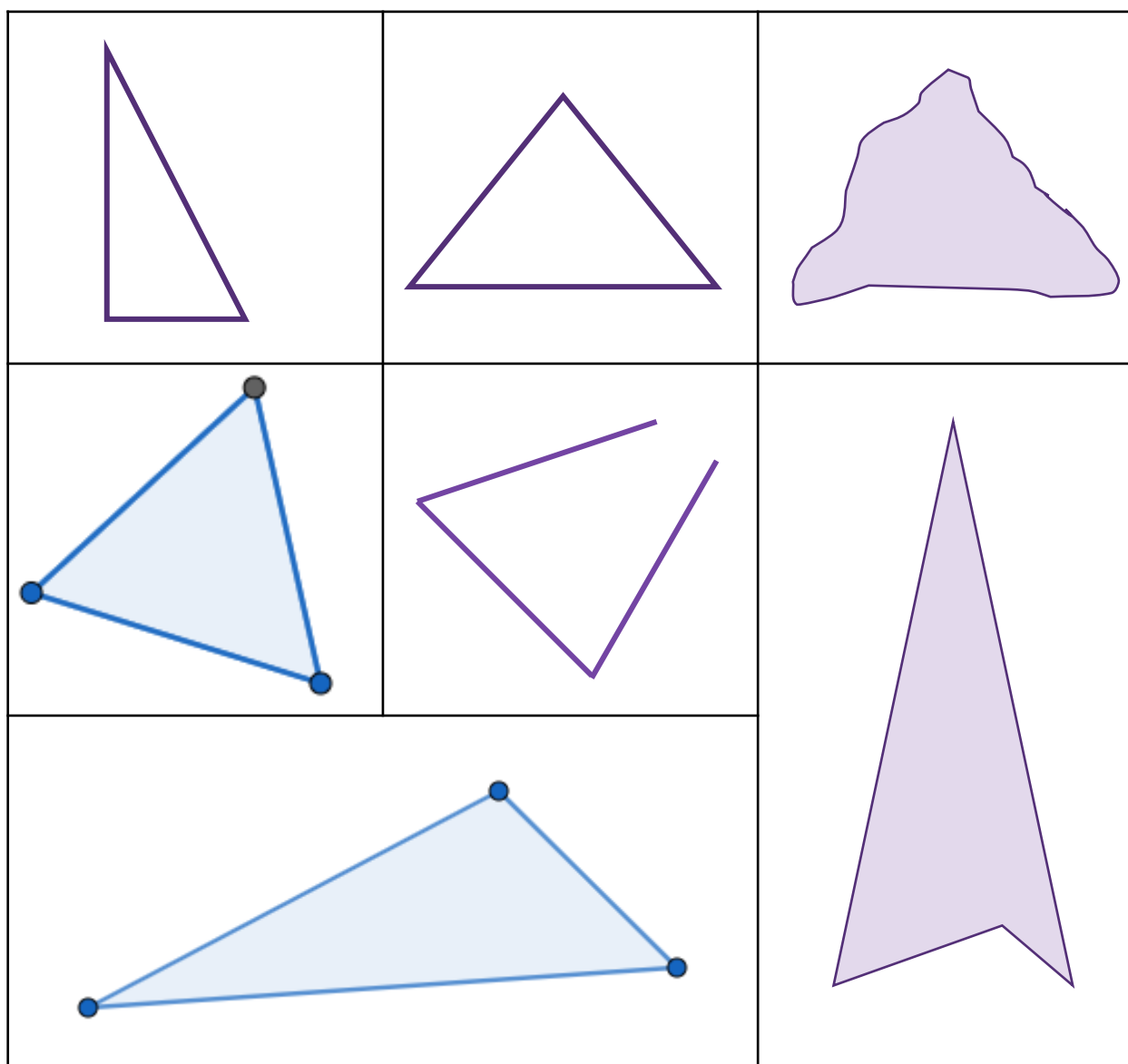


Pack 2 Session A

Talk Task: Creating triangles



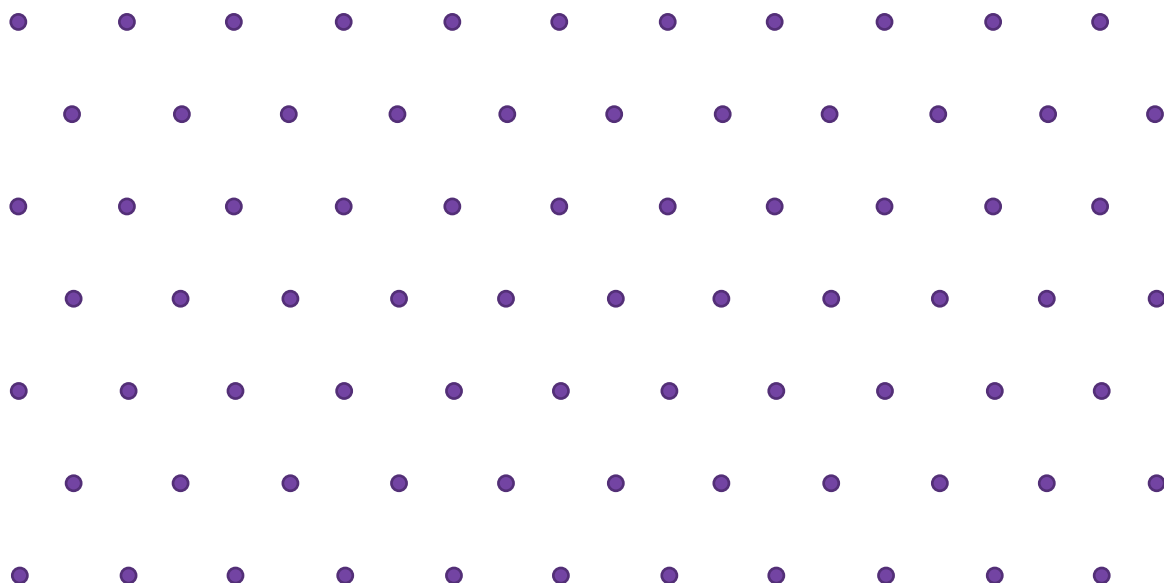
Joining three points with straight lines will form a triangle



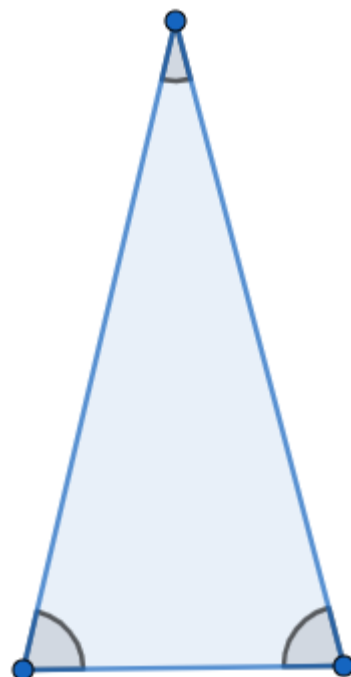
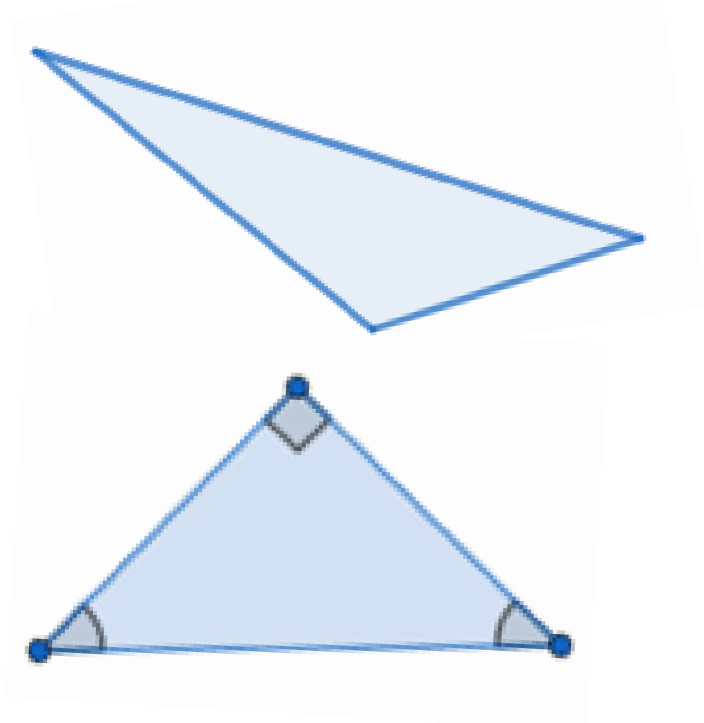
Pack 2 Session A

Activity: Creating triangles

- 1) Use a ruler to join dots to create triangles. How many different ones can you make?

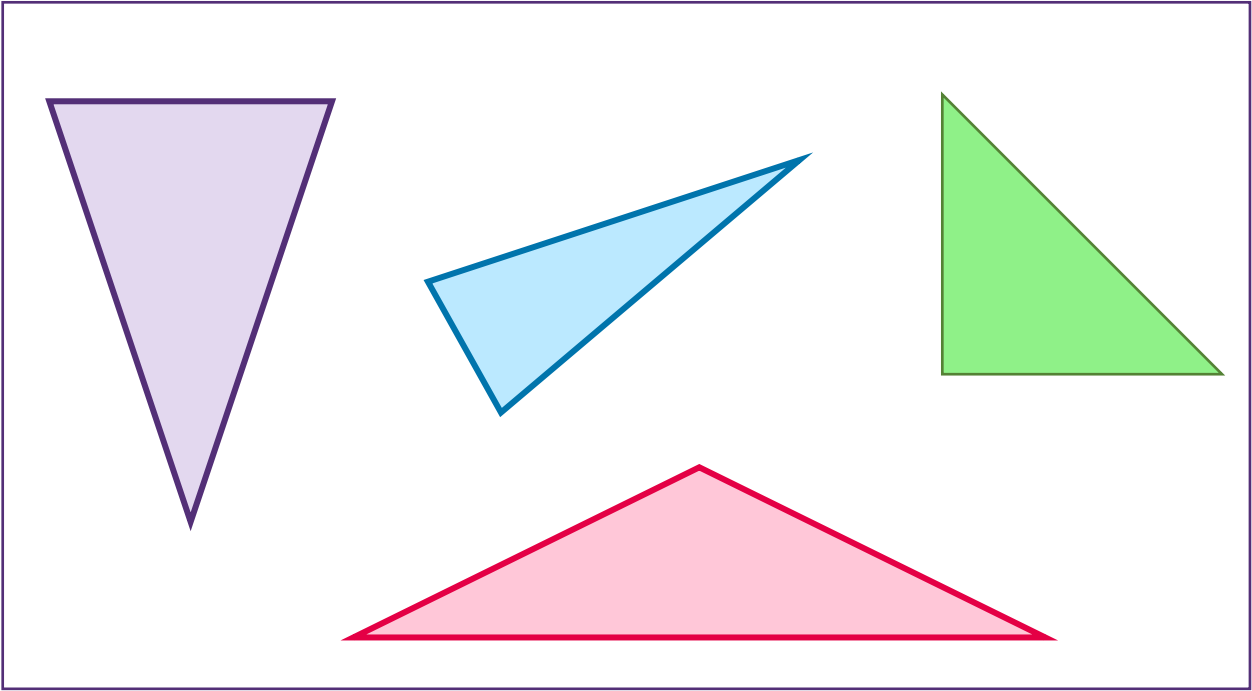
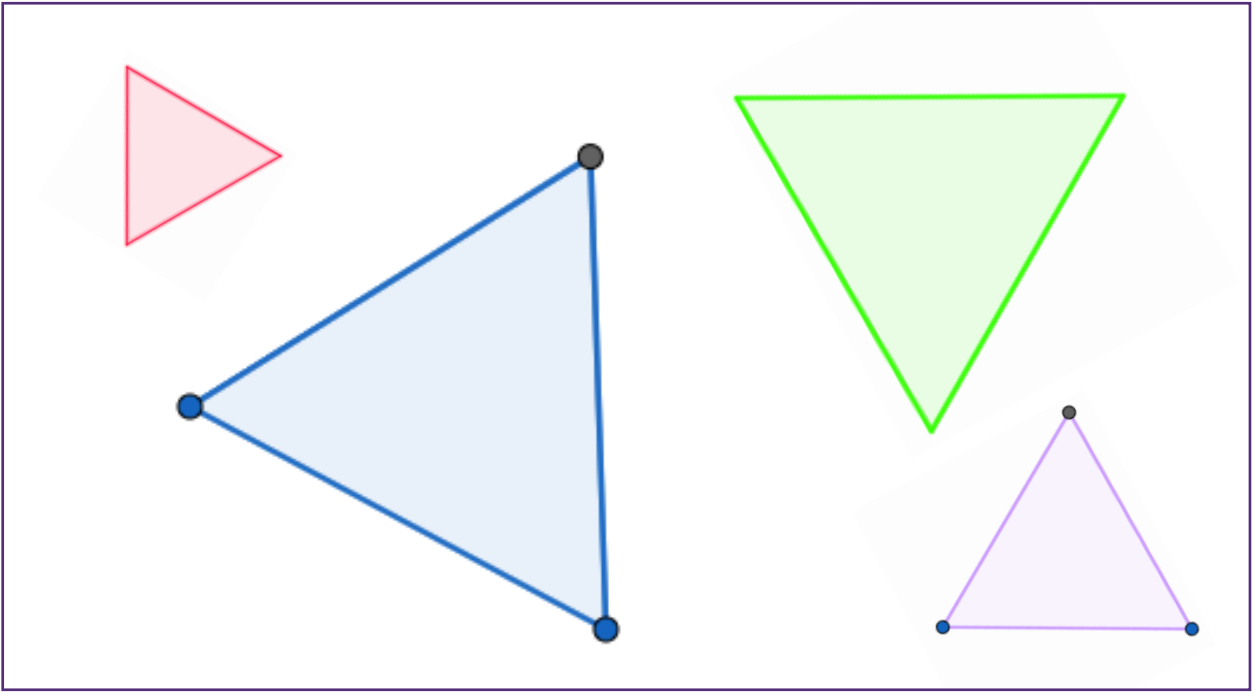
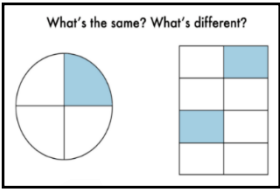


- 2) Describe the angles as acute, obtuse or right angle.



Pack 2 Session B

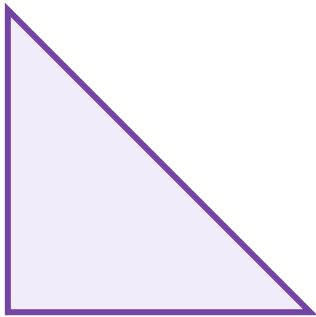
Talk Task: Triangle symmetry



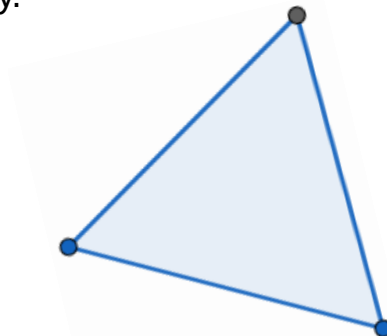
Pack 2 Session B

Activity: Triangle symmetry

- 1) Draw on lines of symmetry. Name each shape as equilateral or isosceles and describe its symmetry.



This is an _____
triangle. It has _____

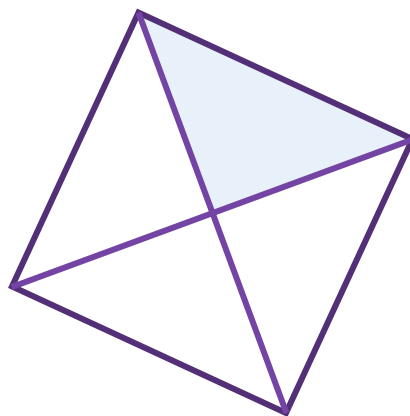
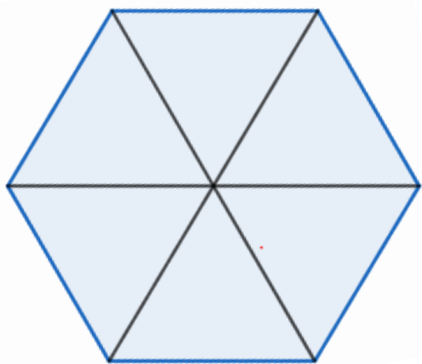
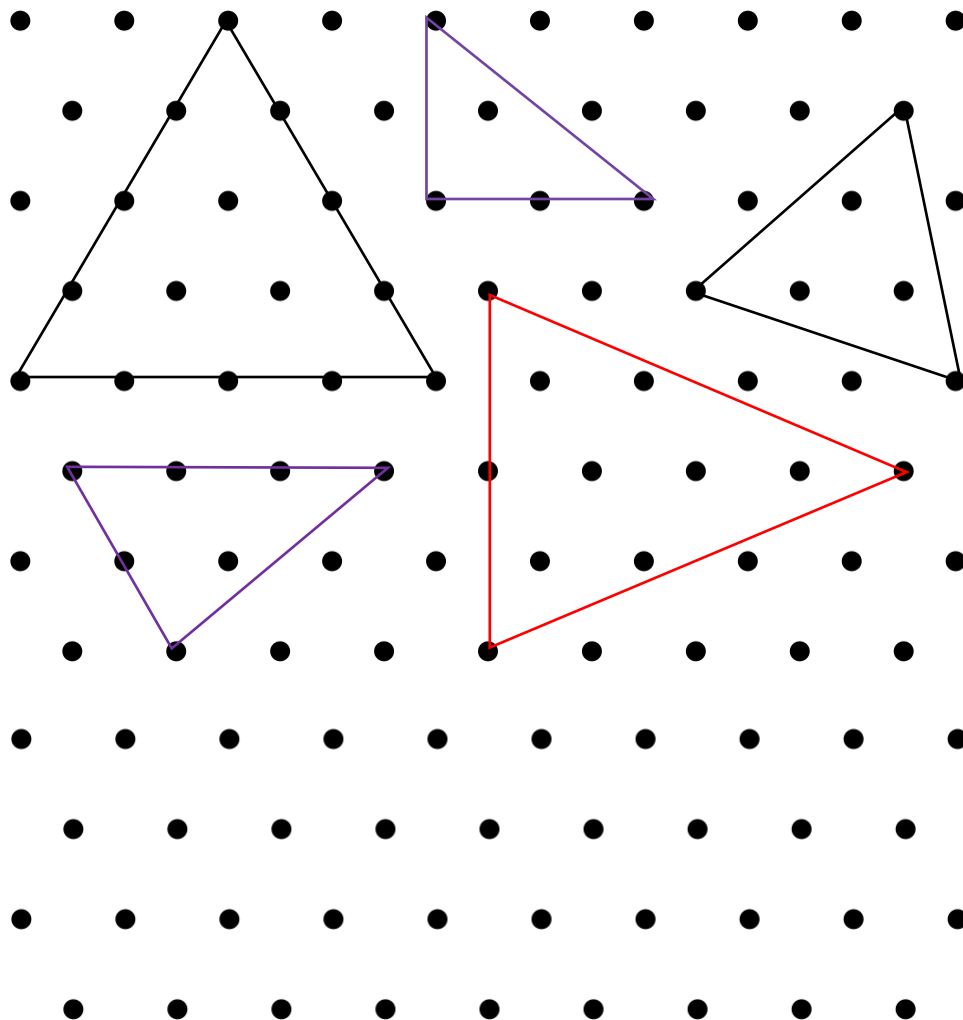


This is an _____
triangle. It has _____

- 2) Are there triangles with two lines of symmetry? Are there triangles with no lines of symmetry? Use the space below to sketch and write your ideas.

Pack 2 Session C

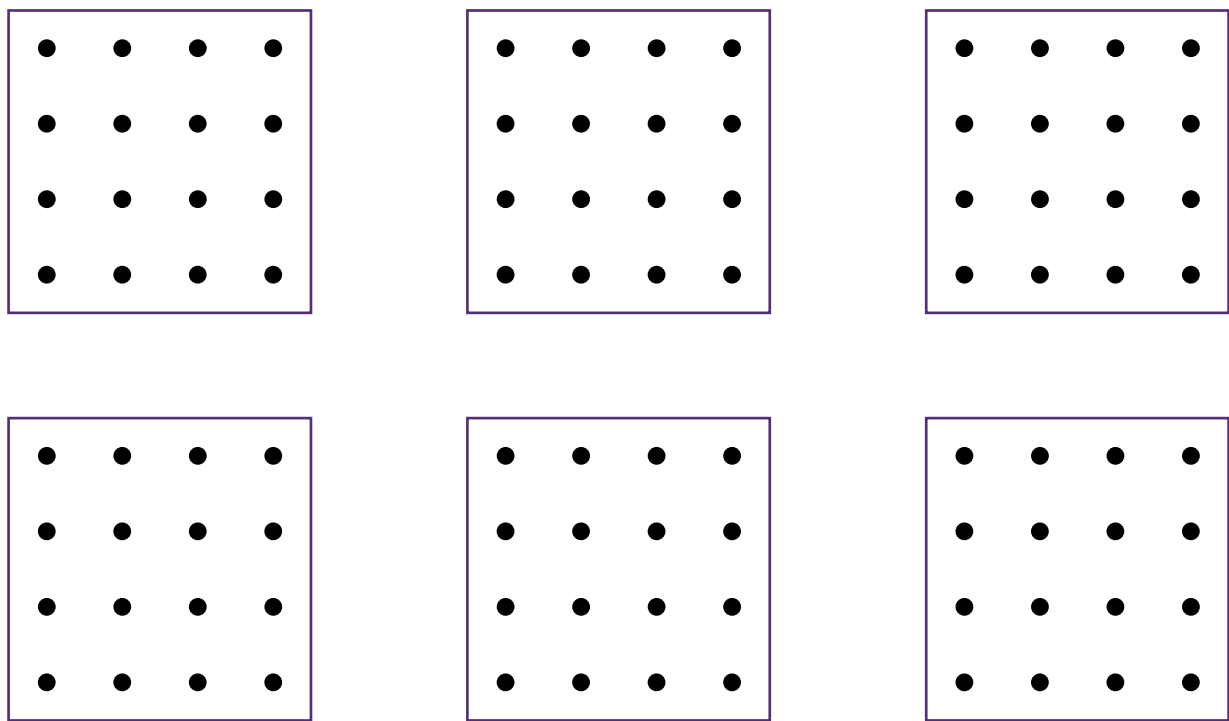
Talk Task: Describing triangles



Pack 2 Session C

Activity: Describing triangles

- 1) Join dots to make different triangles. Write isosceles or scalene to describe each triangle.

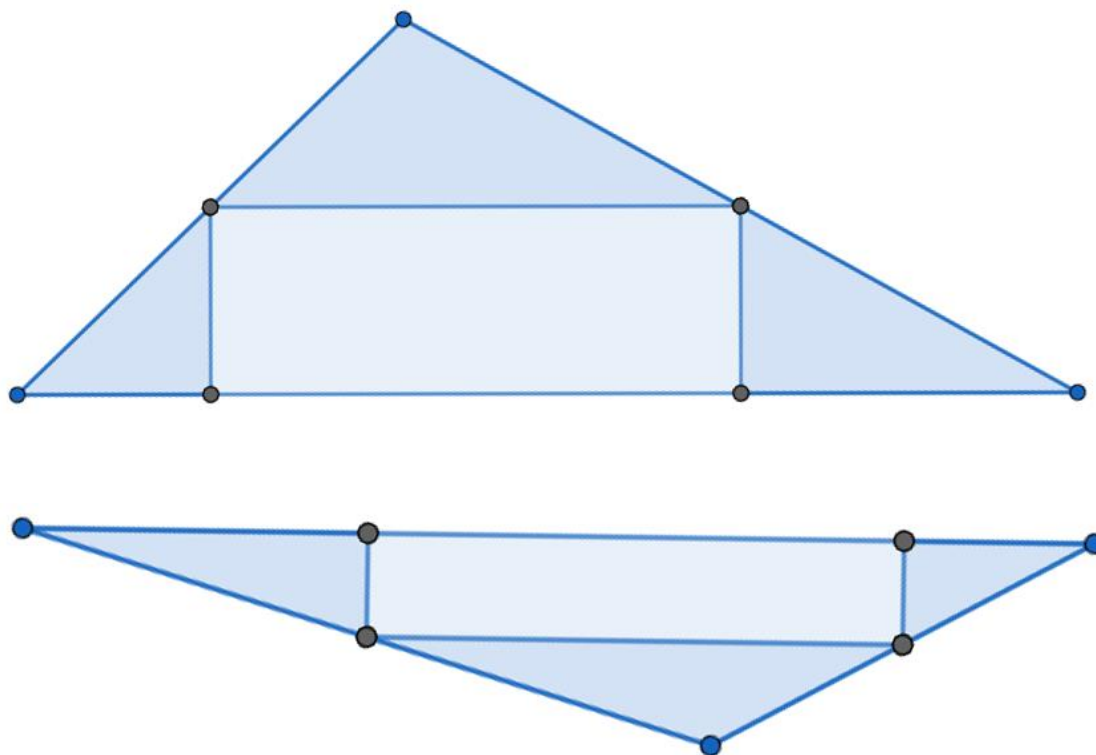
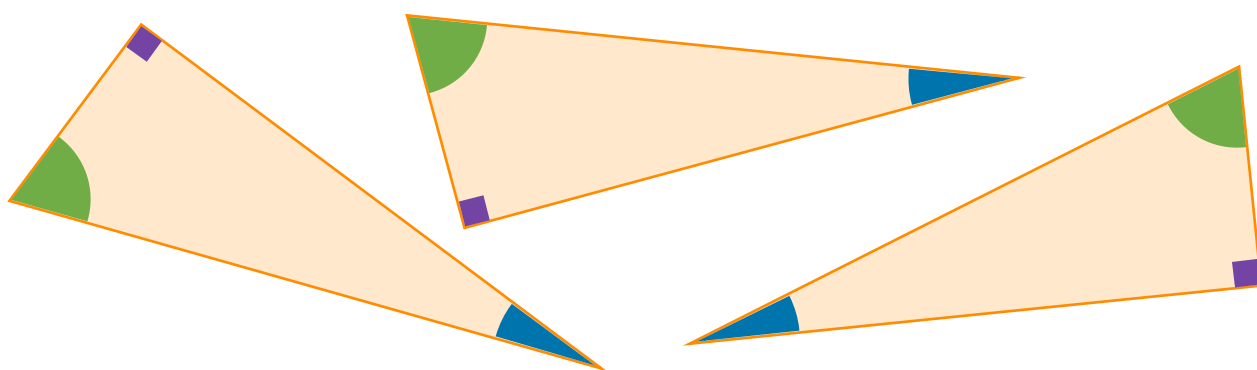
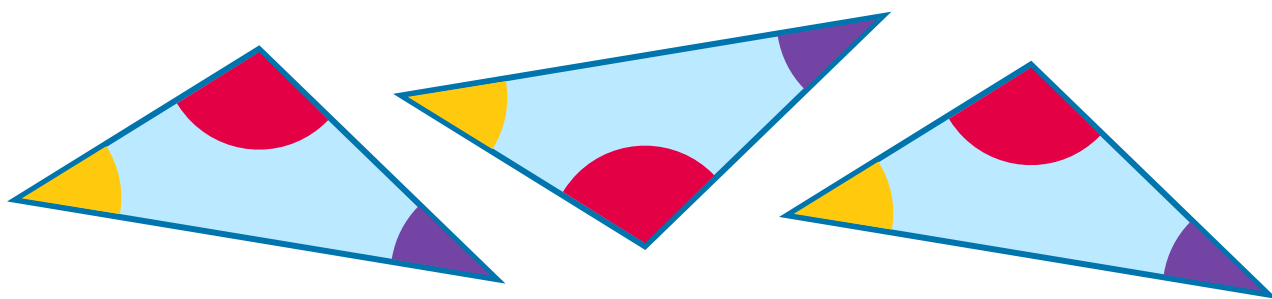


- 2) Try to draw a triangle for each section of the table.

	Scalene	Isosceles	Equilateral
Has a right angle			Not possible
No right angle			

Pack 2 Session D

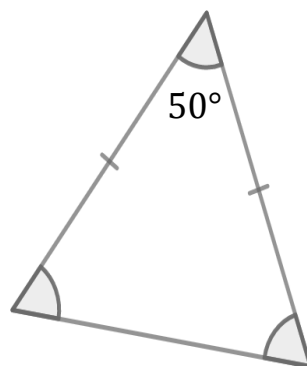
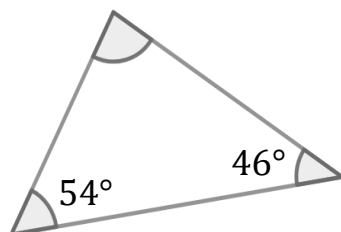
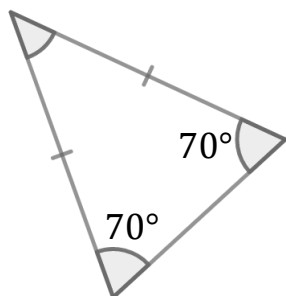
Talk Task: Angles in triangles



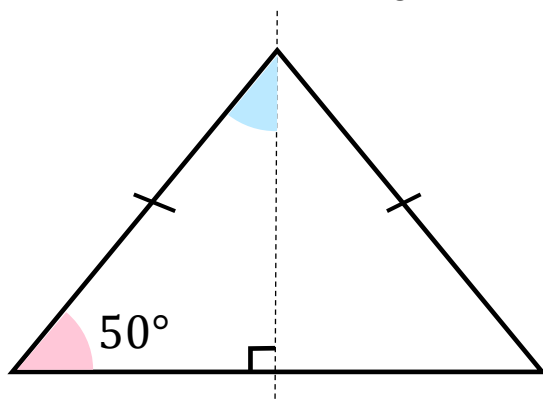
Pack 2 Session D

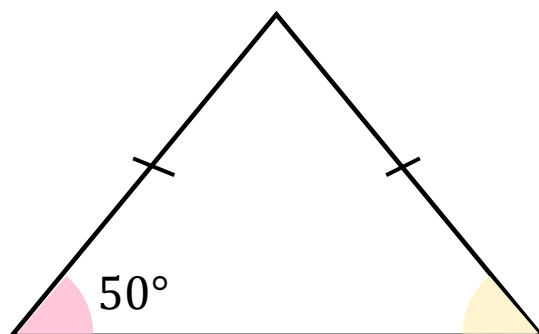
Activity: Angles in triangles

- 1) Calculate the size of each missing angle.

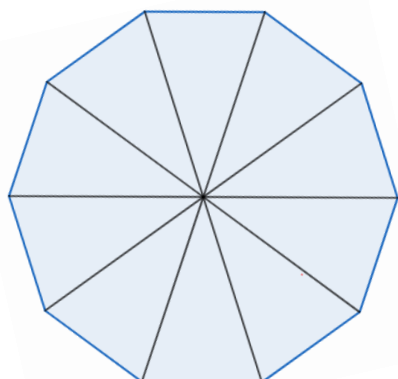


- 2) Write descriptions of two different ways to find the angles in this isosceles triangle. Write each angle in the triangles.





- 3) This regular decagon is split into ten identical triangles. What information can you write about the triangle?





At home materials

Pack 3: Quadrilaterals

Session A) Creating quadrilaterals

Session B) Quadrilateral symmetry

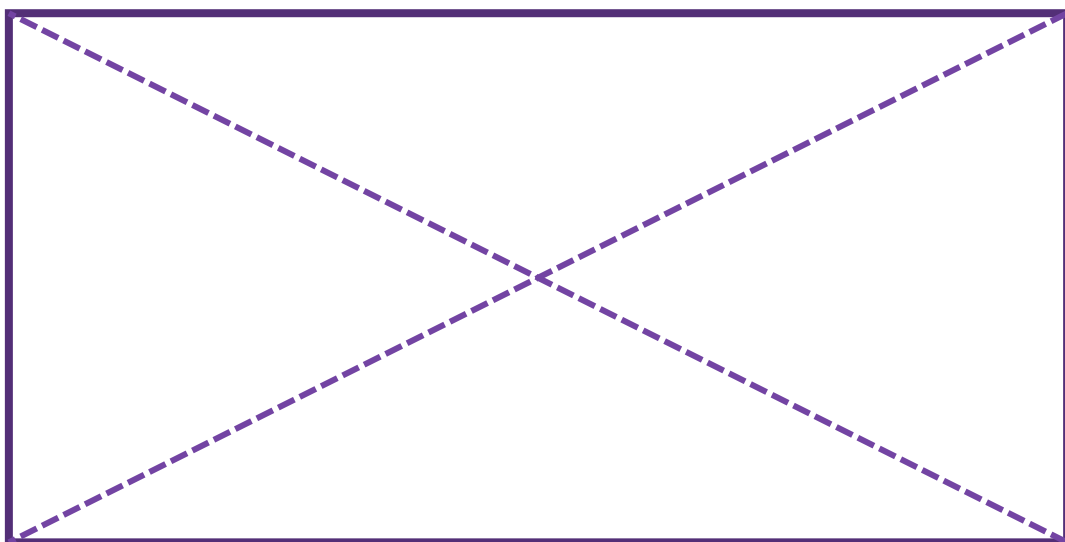
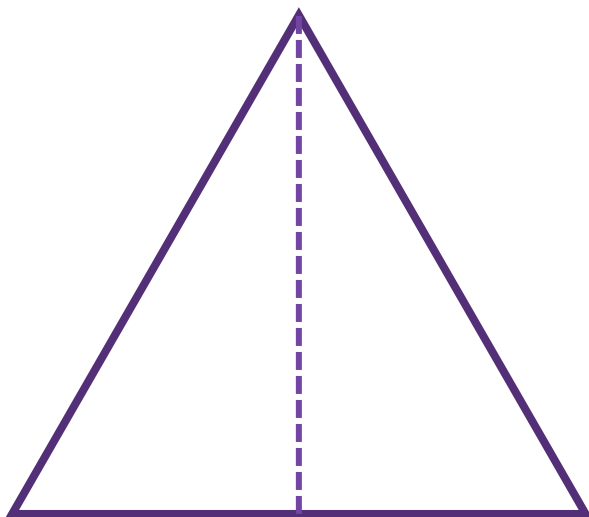
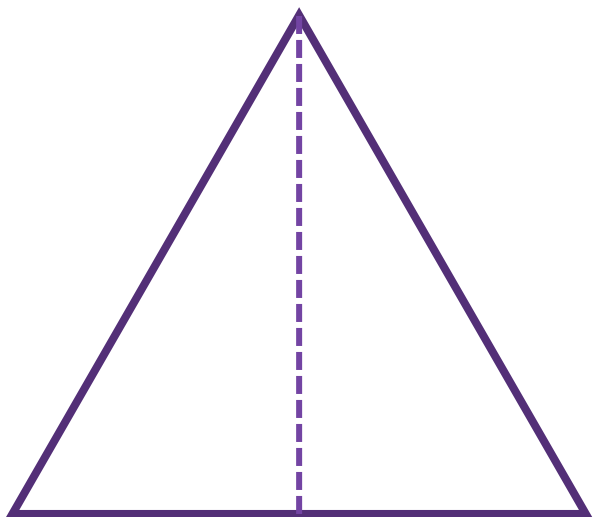
Session C) Angles in quadrilaterals

Session D) Describing quadrilaterals



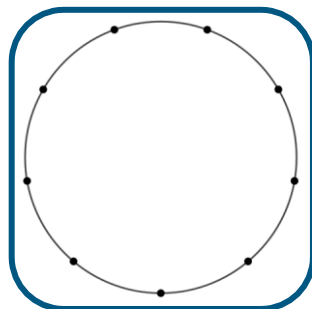
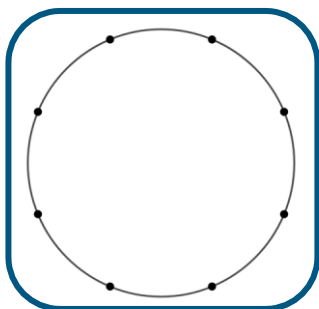
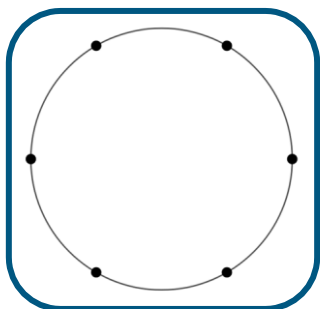
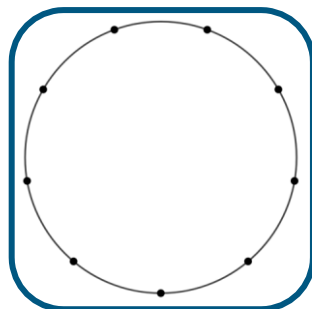
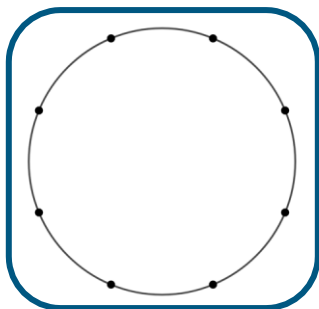
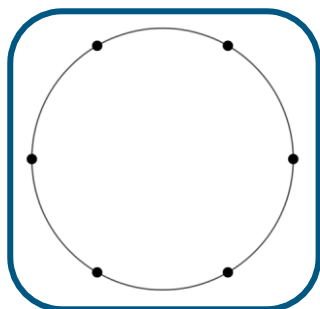
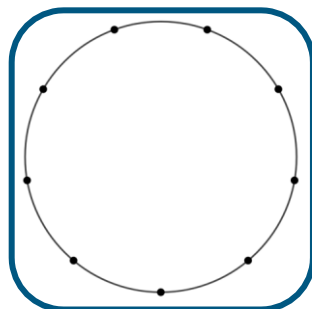
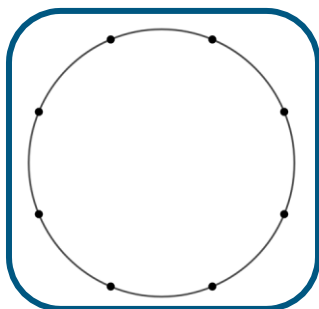
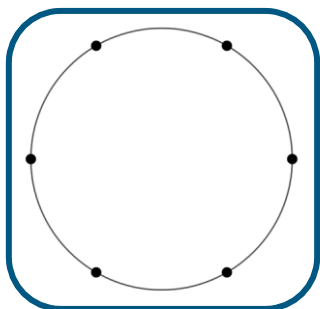
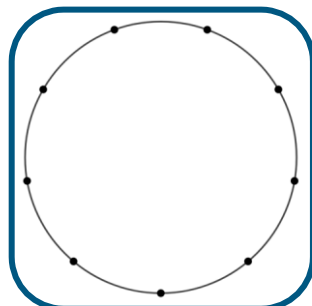
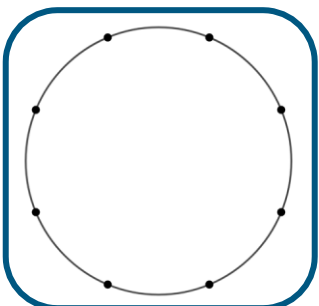
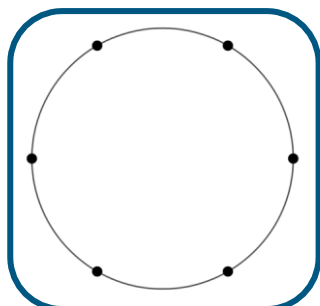
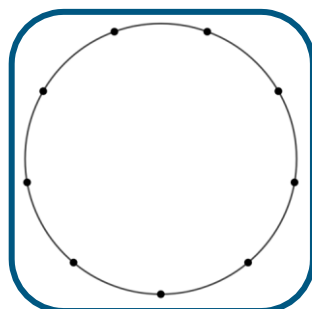
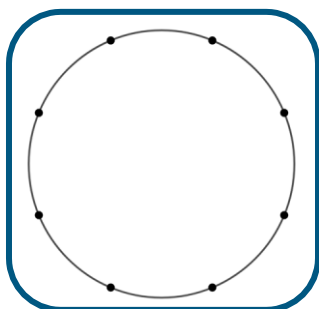
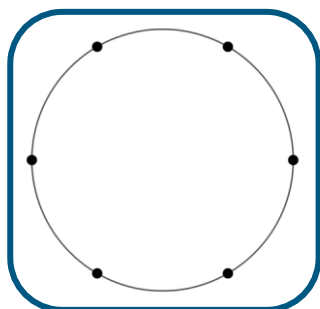
Pack 3 Session A

Talk Task: Creating quadrilaterals



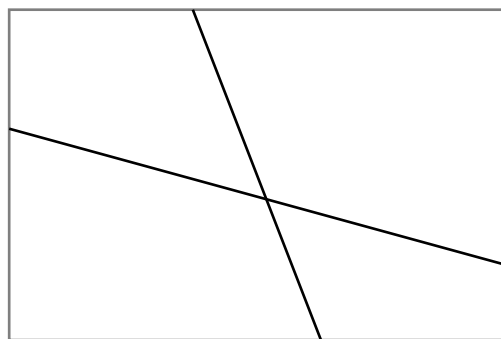
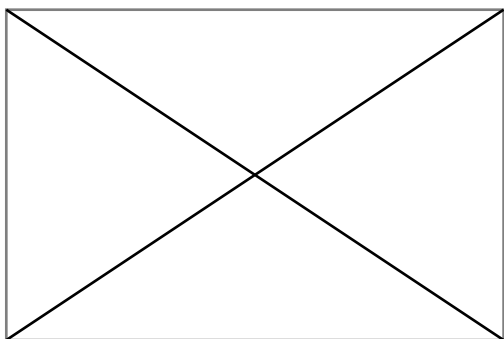
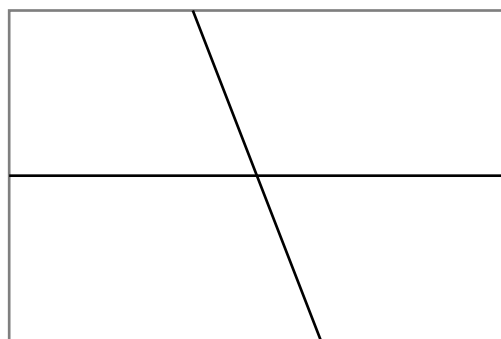
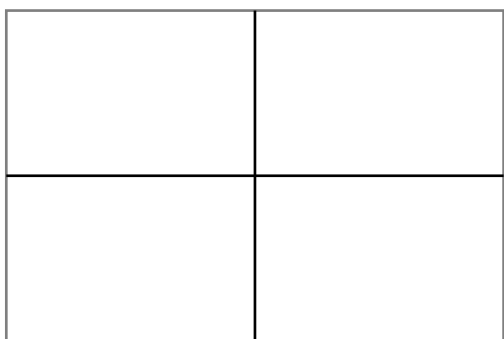
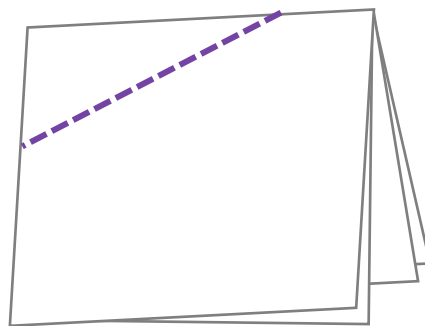
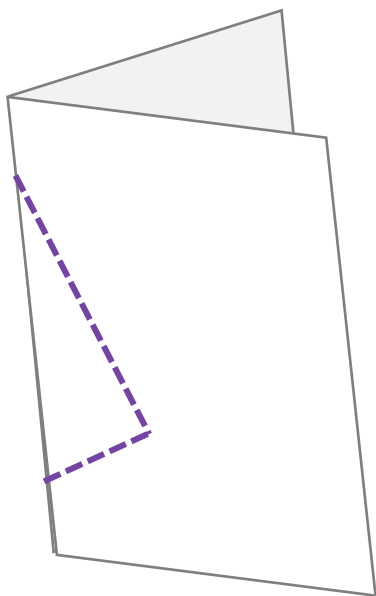
Pack 3 Session A

Activity: Creating quadrilaterals



Pack 3 Session B

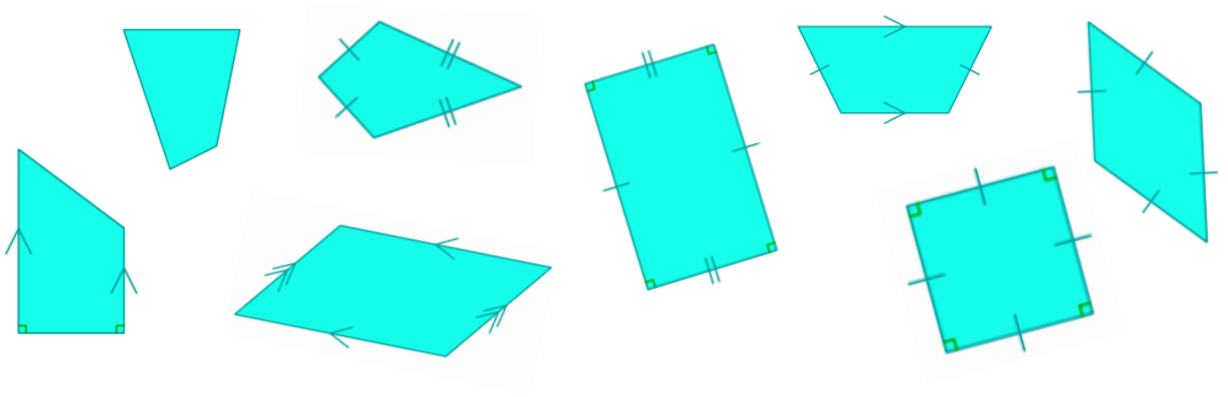
Talk Task: Quadrilateral symmetry

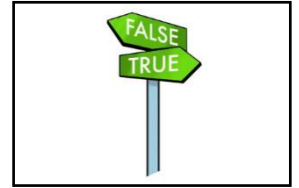


Pack 3 Session B

Activity: Quadrilateral symmetry

	Rotational order of 1	Rotational order of 2	Rotational order of 4
0 lines of symmetry			
1 line of symmetry			
2 lines of symmetry			
4 lines of symmetry			





A quadrilateral can have...

... acute angles

... obtuse angles

... reflex angles



Pack 3 Session C

Activity: Angles in quadrilaterals

Which of the following angle combinations are possible? Sketch examples and label with information.

3 obtuse angles, 1 acute angle	3 acute angles, 1 obtuse angle
2 acute angles, 2 obtuse angles	2 acute angles, 2 reflex angles

What other angles are possible? What angles are not possible?

Pack 3 Session D

Talk Task: Describing quadrilaterals

A rectangle has four right angles	A square has four right angles and four equal length sides
A parallelogram has two pairs of parallel sides and equal opposite angles	A rhombus is a equilateral parallelogram. It has two pairs of parallel sides that are all equal in length.
A trapezium has one pair of parallel sides	A kite has two pairs of equal length adjacent sides.



A square is a rectangle



A square is a parallelogram



A rhombus is a square



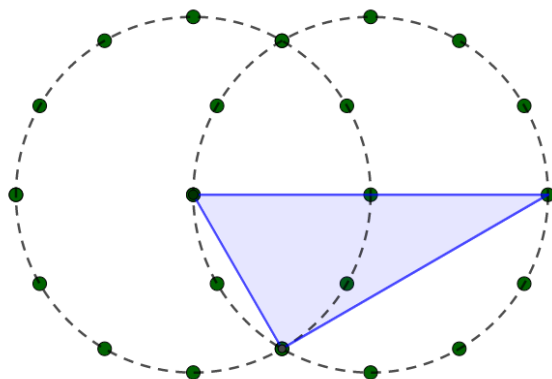
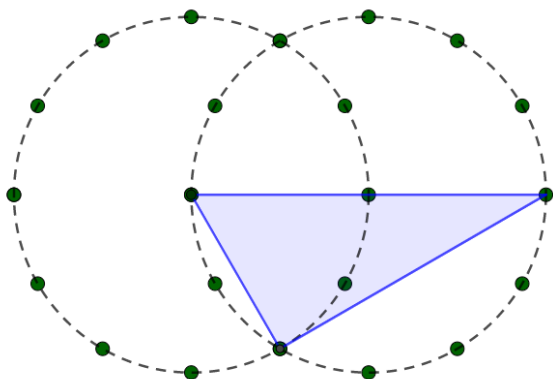
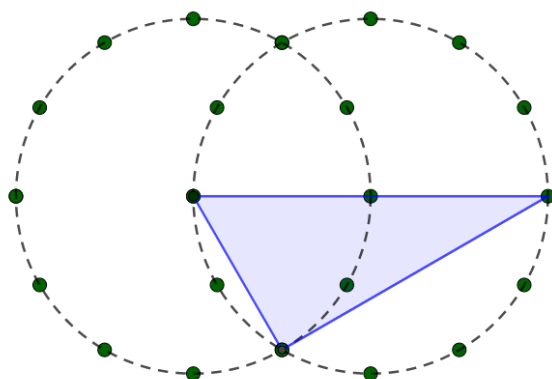
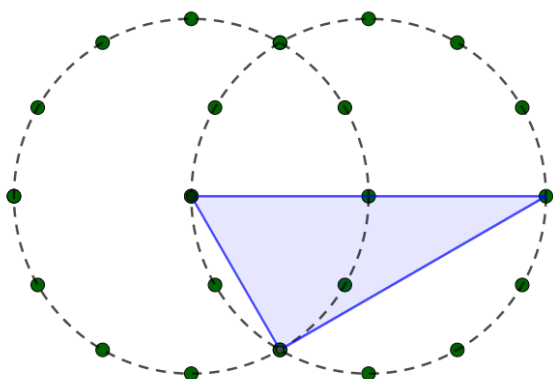
A parallelogram is a rectangle



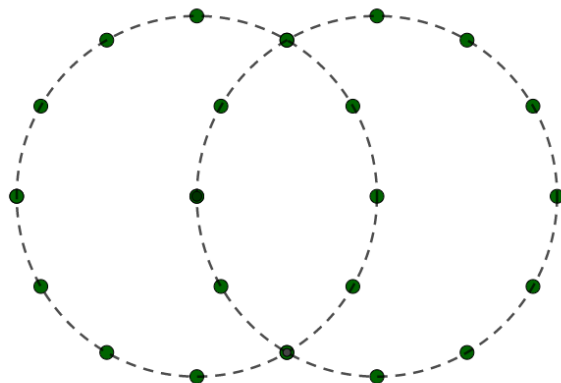
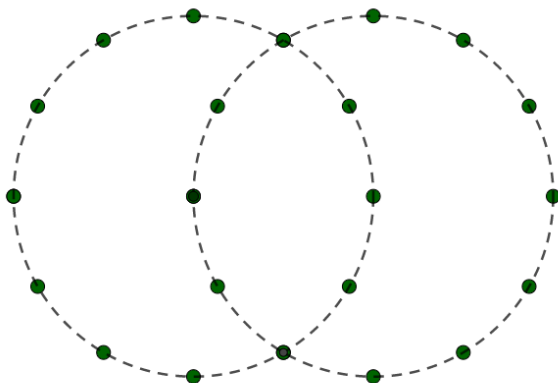
Pack 3 Session D

Activity: Describing quadrilaterals

Draw another triangle to create a quadrilateral and label with information.



Build different quadrilaterals with two triangles and label with information.





At home materials

Pack 4: Area

Session A) What is area?

Session B) Area and arrays

Session C) Squared units

Session D) Exploring area



Pack 4 Session A

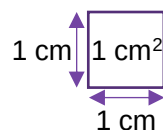
Talk Task: What is area?

surface

squared centimetres

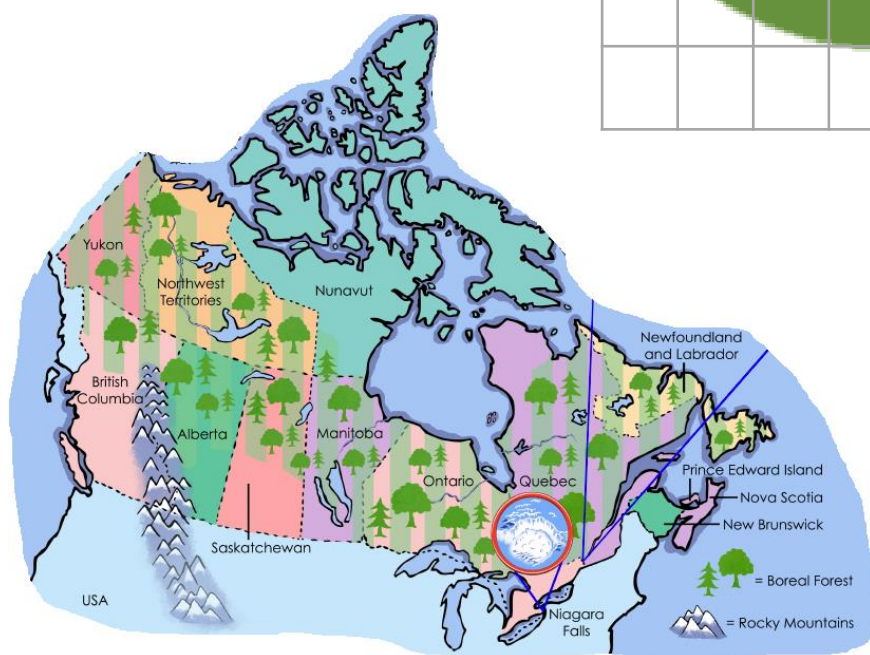
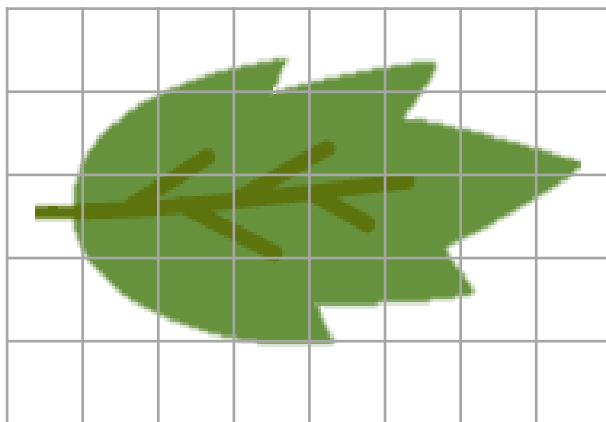
dimension

area



rectangles
(including squares)

multiplication

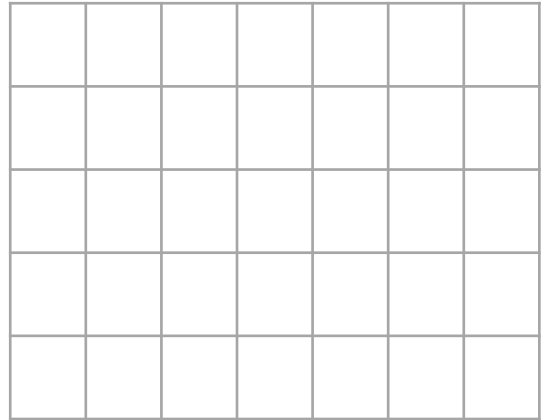
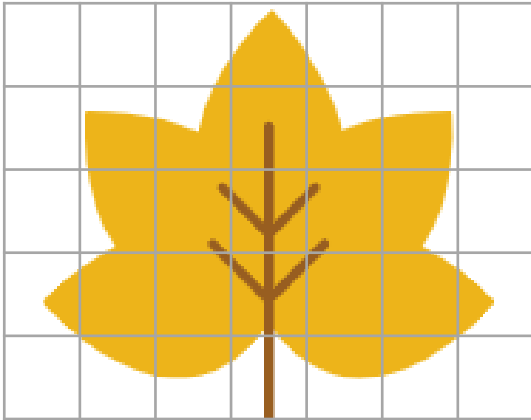


1 million
squared
kilometres

Pack 4 Session A

Activity: What is area?

- 1) Decide the area of this leaf using the grid of squares. Then draw a leaf with an area of approximately 14 cm^2

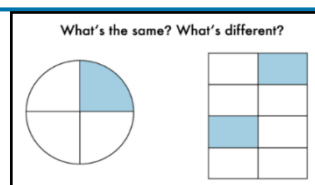
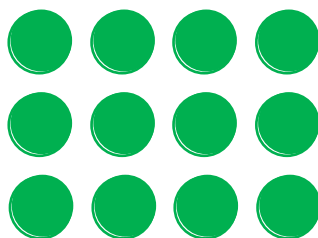
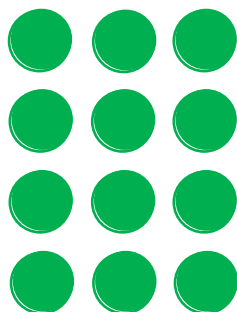


- 2) How many of this sheet of paper will cover the table you are working on? Draw a sketch to show how you worked it out.

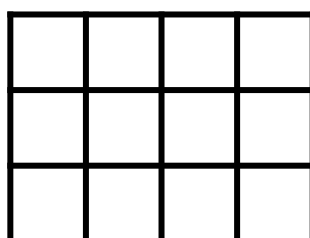
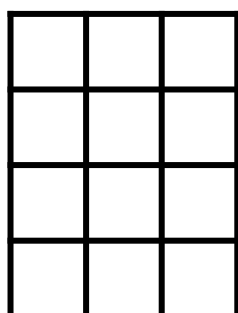
Pack 4 Session B

Talk Task: Area and arrays

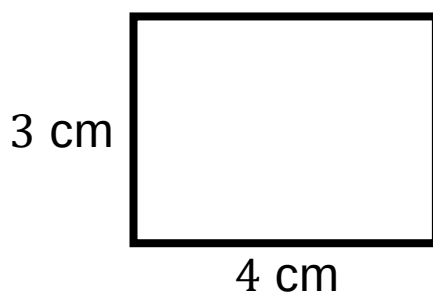
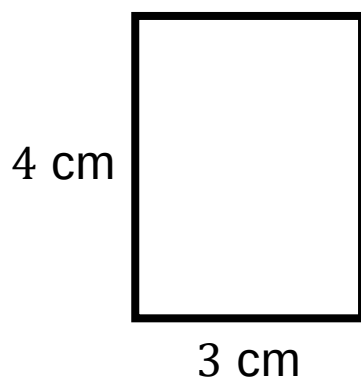
Repeat of Pack 2 Session B
Talk Task: Arrays and area of rectangles



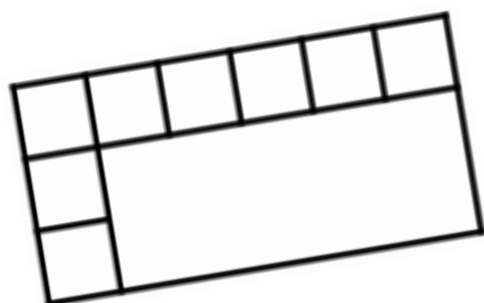
counters



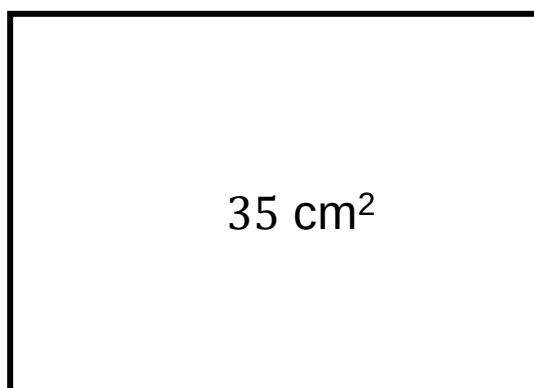
squares



cm²
 squared
 centimetres



5 cm

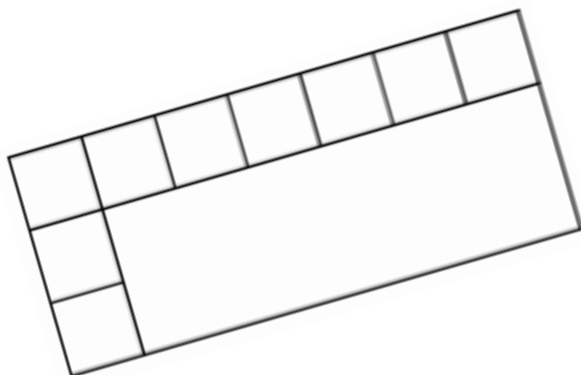


35 cm²

Pack 4 Session B

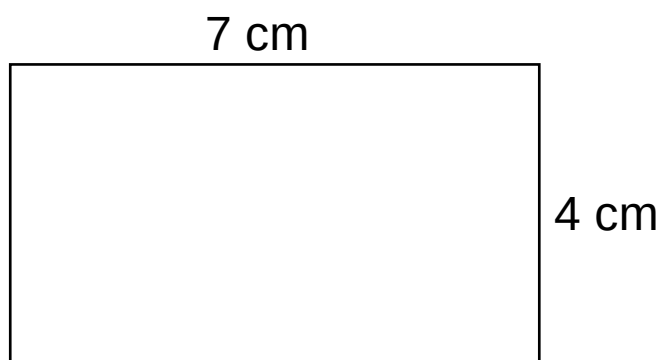
Activity: Area and arrays

1) Work out and write down the area of each shape

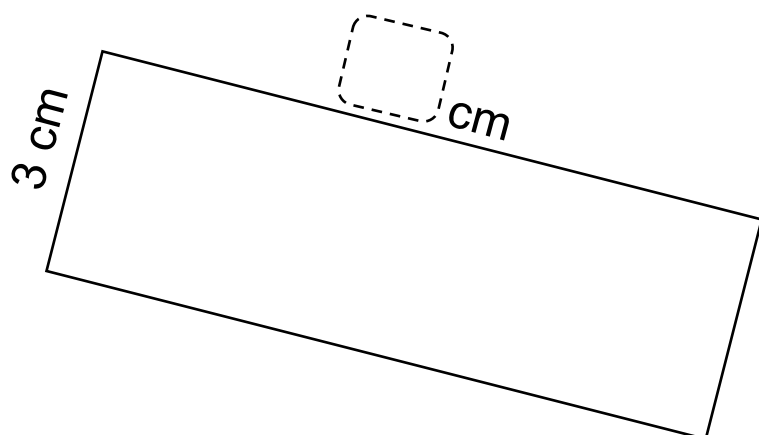


Area:

cm²



Area:



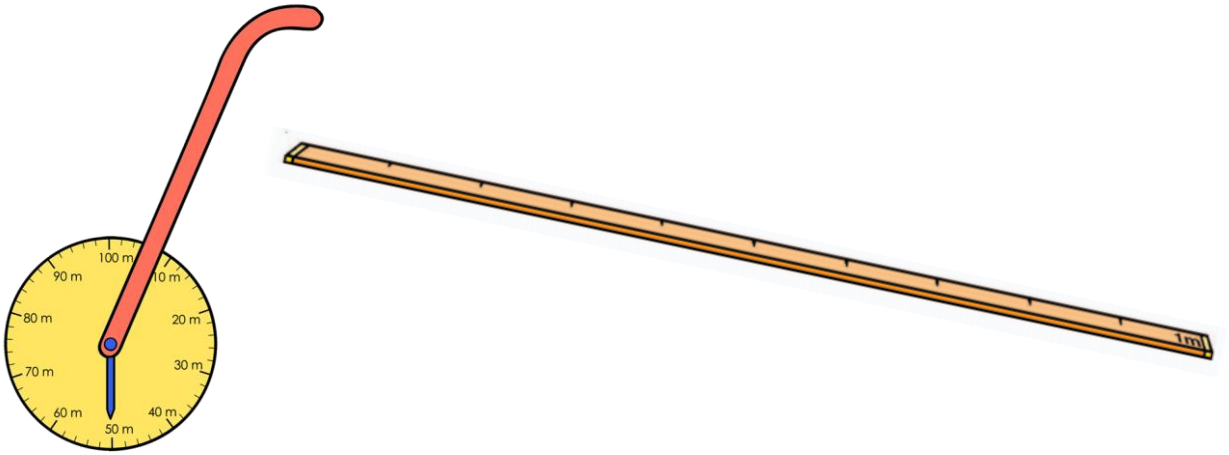
Area:

27 cm²

2) For each area, sketch a different shape with the same area.

Pack 4 Session C

Talk Task: Squared units



Work out the area of something.
Work in metres and squared metres.
Sketch diagrams of what you do.

I know 1 metre is
100 centimetres

1 m² must be the
same as 100 cm²



Mark out a squared metre. What do you think?

Pack 4 Session C

Activity: Squared units

- 1) Decide if the following involve thinking about **length** or **area**.

Distance I travel to school

Turf for a football pitch

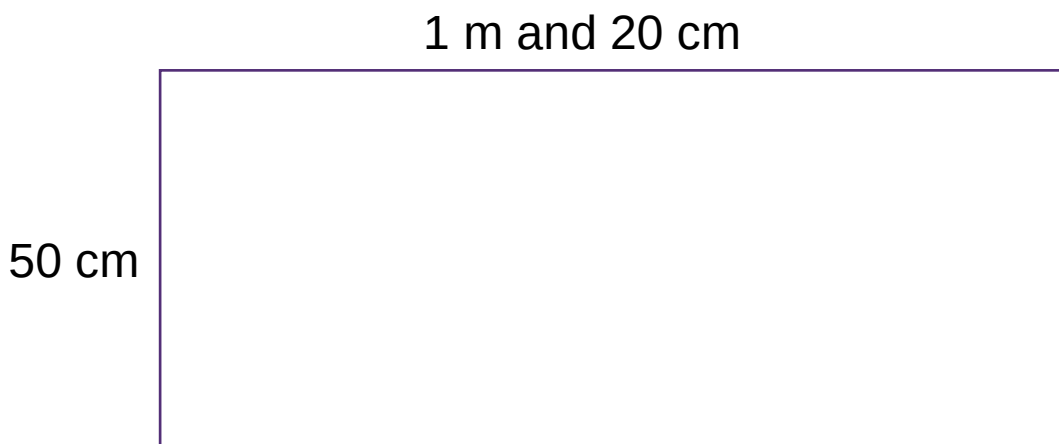
Paint needed to cover a wall

Fence needed to go around a park

Length of a pencil

Tiles to cover a bathroom floor

- 2) Work out the area of the rectangle. Make notes to show what you did.



- 3) Write an example of when you might use each of these units

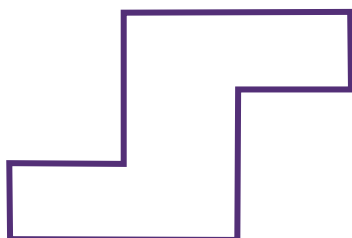
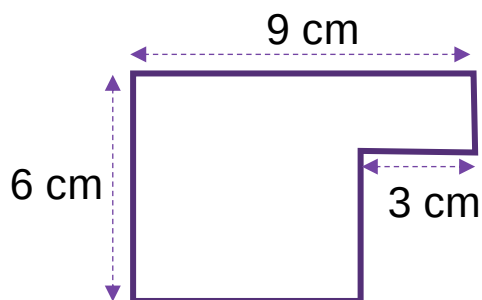
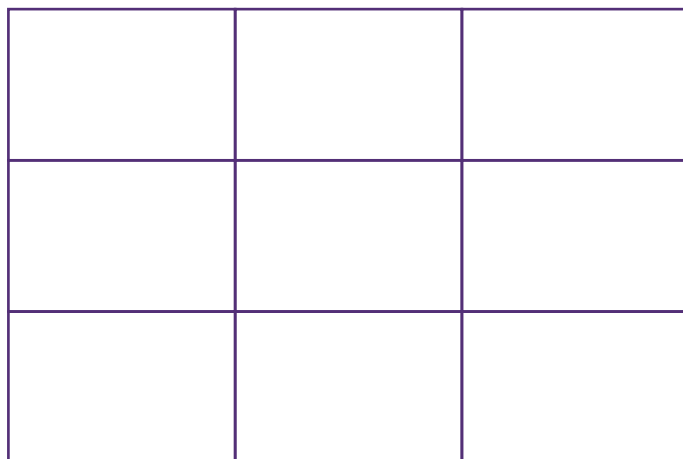
cm^2 squared centimetres

m^2 squared metres

km^2 squared kilometres

Pack 4 Session D

Talk Task: Exploring area

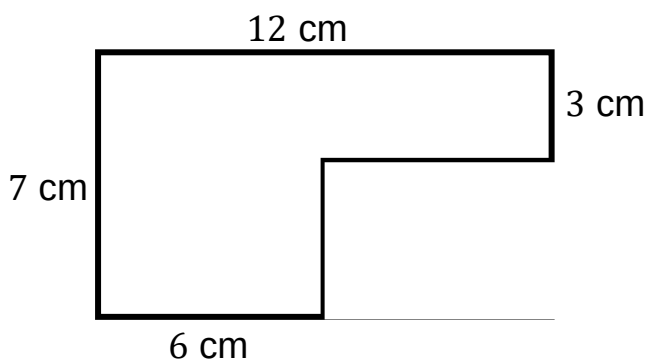
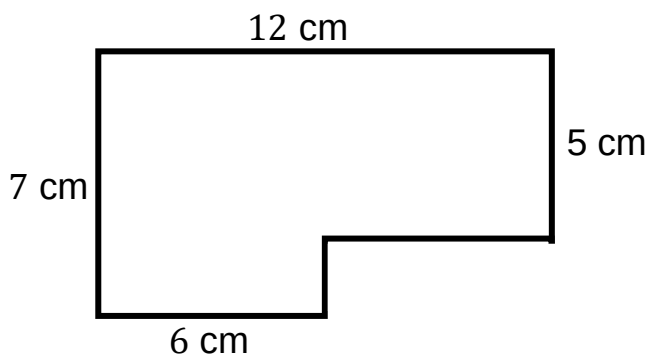
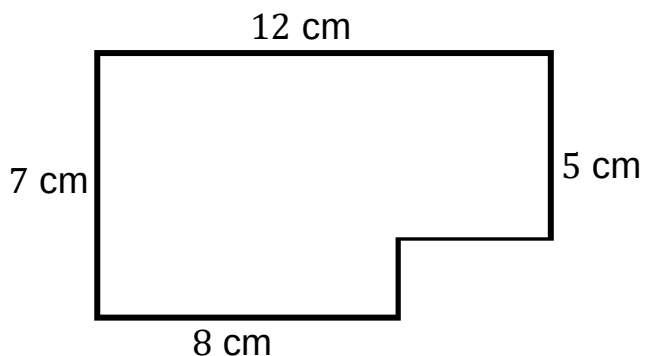
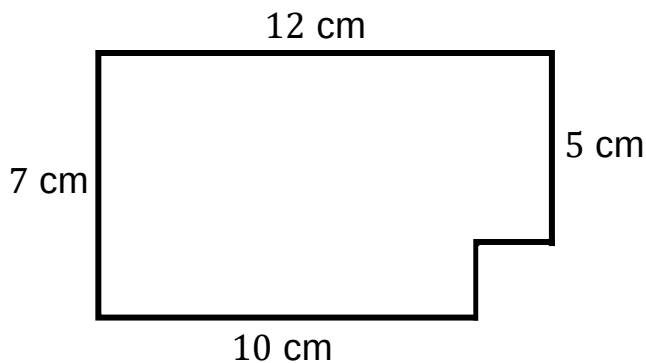
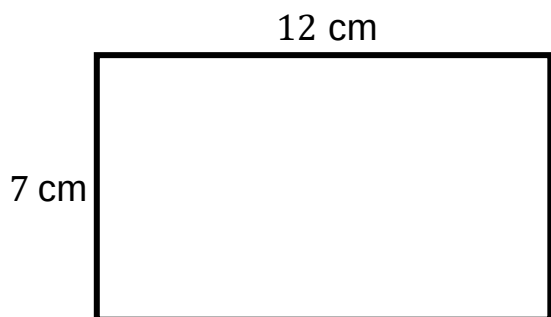


NOT DRAWN TO SCALE

Pack 4 Session D

Activity: Exploring area

Work out the area of each shape. Remember to include missing lengths



Where could you go next?

At home materials

Pack 5: Positive and negative numbers

Session A) Negative numbers in context

Session B) Extending the number line

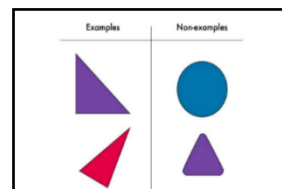
Session C) Comparing numbers

Session D) Greater than and less than



Pack 5 Session A

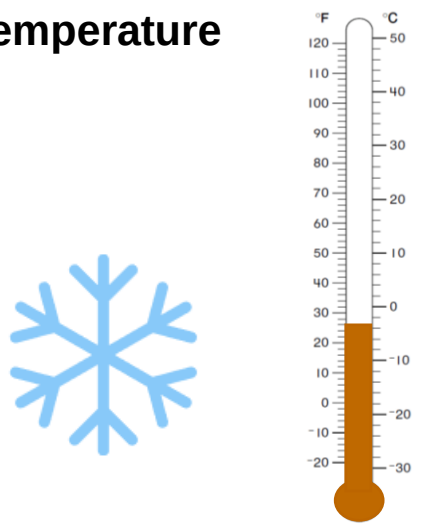
Talk Task: Positive and negative numbers



Below ground



Temperature



Debt

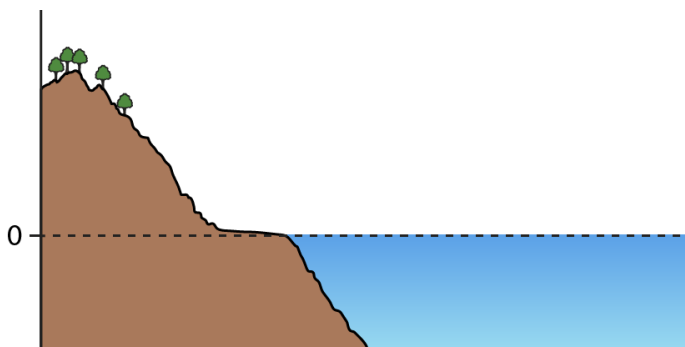


I have £20 in my bank account.
I spend £30.

My bank statement says –£10



Sea level



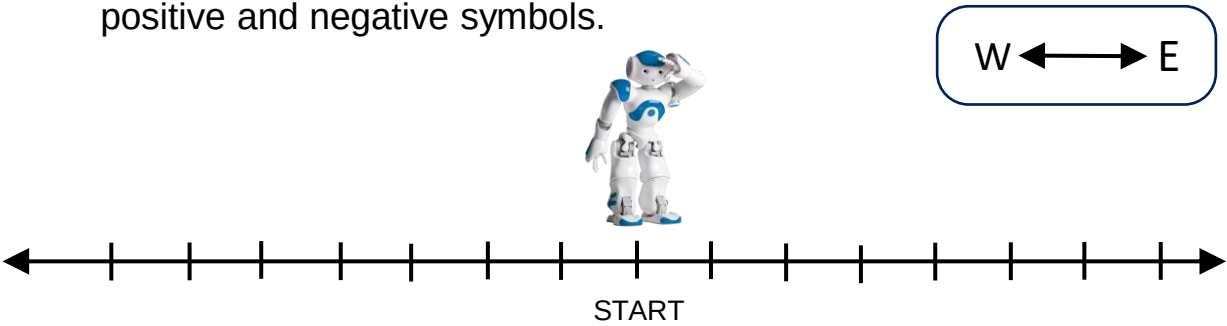
The lowest exposed
land on Earth is at
the Dead Sea shore,
at –413 metres



Pack 5 Session A

Activity: Positive and negative numbers

- 1) Describe the position of the robot after each movement using positive and negative symbols.



From START, move two steps east. +2
From START, move two steps west -2

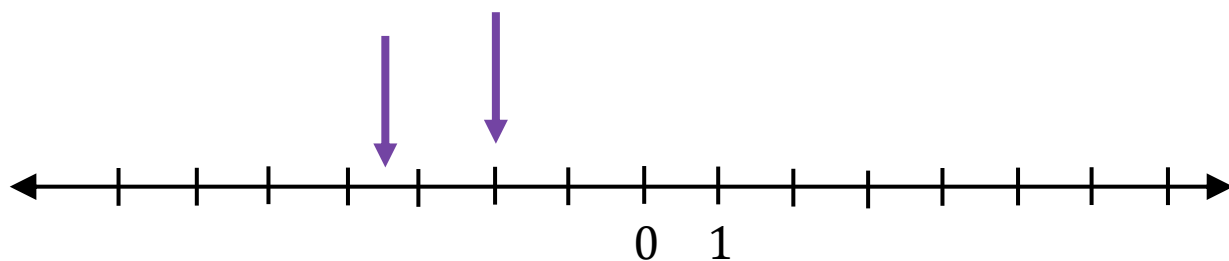
- a) From START, move 5 steps east.
- b) From START, move 3 steps west
- c) From START, move 2 steps east and then 4 steps east
- d) From START, move 2 steps west and then 3 steps west
- e) From START, move 3 steps east then 4 steps west
- f) From START, move 1 steps west then 4 steps east

- 2) Sketch a picture of a building that has this panel in the lift

3	2
1	G
-1	-2
-3	-4

Pack 5 Session B

Talk Task: Extending the number line



Rainforest 21°C



Arctic -18°C



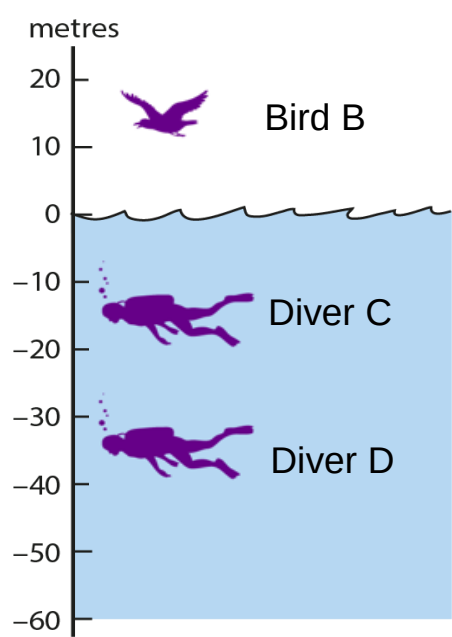
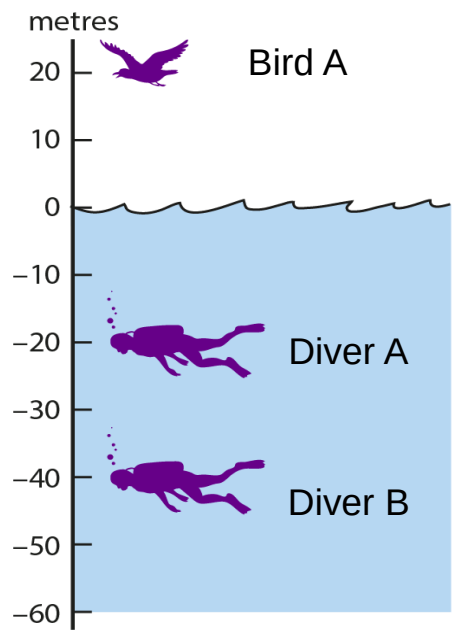
Desert 35°C



Pack 5 Session B

Activity: Extending the number line

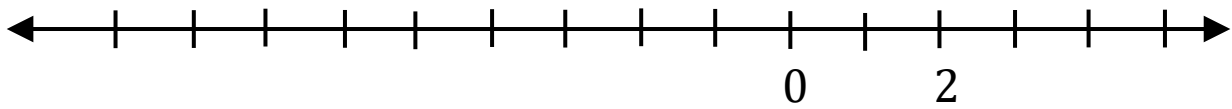
1) Use the images to match the information.



Bird A	33 m below sea level	15 m
Bird B	20 m above sea level	-15 m
Diver A	20 m below sea level	-33 m
Diver B	15 m above sea level	20 m
Diver C	15 m below sea level	-40 m
Diver D	40 m below sea level	-20 m

2) Mark the position of each value on the number line.

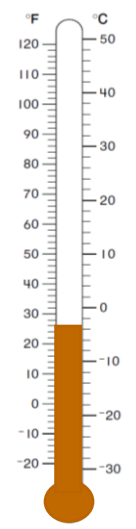
- a) -2 b) 3.5 c) +1 d) -4.5 e) -8



Pack 5 Session C

Talk Task: Comparing numbers

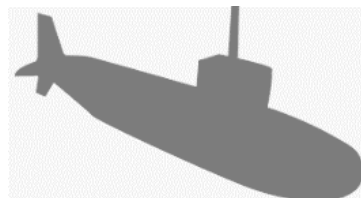
I am in a building on floor -4 . Do I need to go up or down the stairs to get to -2 ?



The temperature was -3°C .
It got colder.



A submarine is at a depth of -80 m .
It travels towards the surface and
then goes deeper.



Pack 5 Session C

Activity: Comparing numbers

1) Complete the sentences

-3°C is warmer than $^{\circ}\text{C}$

-3°C is colder than $^{\circ}\text{C}$

$^{\circ}\text{C}$ is warmer than -4°C

$^{\circ}\text{C}$ is colder than -4°C

2) Delete a word to make each sentence correct

-3°C is warmer / colder than -4°C

-3°C is warmer / colder than -1°C

-3°C is higher / lower than -4°C

-3°C is greater / less than -4°C

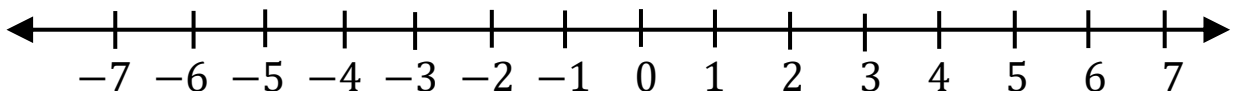
3) Write the numbers from smallest to largest. The number line can help.

a) 6, -2 , 3, -5

b) -3 , 4, 0, -7

c) 1, -9 , -2 , 3

d) -1 , -5 , -8 , -3



Pack 5 Session D

Talk Task: Greater than and less than

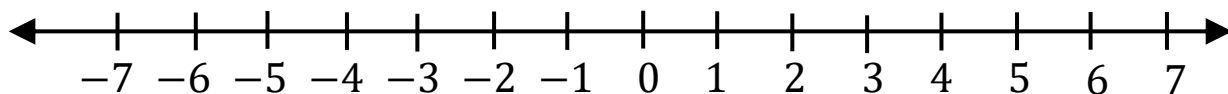


A positive number is greater than a negative number

A positive number is equal to a negative number

A positive number is less than a negative number

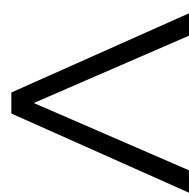
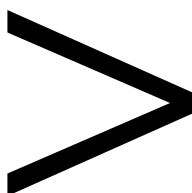
A negative number is greater than a negative number



–7 is greater than 4
because $7 > 4$



–7 is greater than –4
because $7 > 4$



Pack 5 Session D

Activity: Greater than and less than

- 1) Choose the correct symbol, $>$ or $<$, to complete each.
Then choose **always** or **never** to complete the sentences.

$$\begin{array}{rcl} -1 & \bigcirc & 2 \\ -2 & \bigcirc & 2 \\ -3 & \bigcirc & 2 \\ -4 & \bigcirc & 2 \end{array}$$

A negative number is _____
less than a positive number

$$\begin{array}{rcl} 1 & \bigcirc & -2 \\ 2 & \bigcirc & -2 \\ 3 & \bigcirc & -2 \\ 4 & \bigcirc & -2 \end{array}$$

A positive number is _____
less than a negative number

- 2) Choose the correct symbol, $>$ or $<$ or $=$, to complete each.

$$\begin{array}{rcl} 2 & \bigcirc & 5 \\ 3 & \bigcirc & 6 \\ 4 & \bigcirc & 7 \\ 24 & \bigcirc & 27 \end{array}$$

$$\begin{array}{rcl} -2 & \bigcirc & -5 \\ -3 & \bigcirc & -6 \\ -4 & \bigcirc & -7 \\ -24 & \bigcirc & -27 \end{array}$$

$$\begin{array}{rcl} 21 & \bigcirc & 19 \\ 21 & \bigcirc & 20 \\ 21 & \bigcirc & 21 \\ 21 & \bigcirc & 22 \end{array}$$

$$\begin{array}{rcl} -21 & \bigcirc & -19 \\ -21 & \bigcirc & -20 \\ -21 & \bigcirc & -21 \\ -21 & \bigcirc & -22 \end{array}$$

- 3) Mark the position of zero, five and negative five on each number line.

a)



b)



c)

