




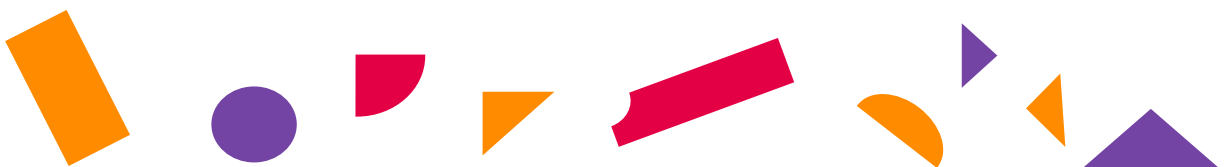


**At home materials  
Guidance Pack  
Year 6 Weeks 5-9**

<b>Week 5</b>	<b>Pack 1: Angles and shapes</b> Session A) 90 and 180 degrees Session B) 360 degrees Session C) Describing polygons Session D) Comparing shapes	
<b>Week 6</b>	<b>Pack 2: Triangles</b> Session A) Creating triangles Session B) Triangle symmetry Session C) Describing triangles Session D) Angles in triangles	
<b>Week 7</b>	<b>Pack 3: Quadrilaterals</b> Session A) Creating quadrilaterals Session B) Quadrilateral symmetry Session C) Angles in quadrilaterals Session D) Describing quadrilaterals	
<b>Week 8</b>	<b>Pack 4: Area</b> Session A) What is area? Session B) Area and arrays Session C) Squared units Session D) Exploring area	
<b>Week 9</b>	<b>Pack 5: Positive and negative numbers</b> 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

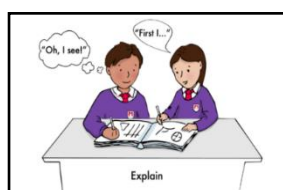
20 minute Talk Task and 10 minute independent activity

## Session guidance

Get talking and grow your language.

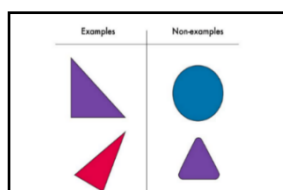
Use equipment, manipulatives, models and images to show and explain.

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.



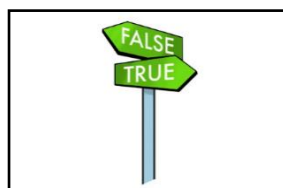
### Reason it

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



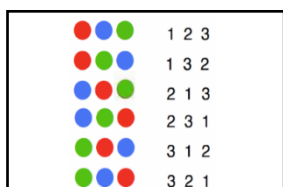
### Generate examples and non-examples

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



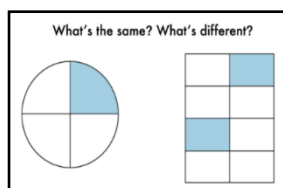
### True or false?

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

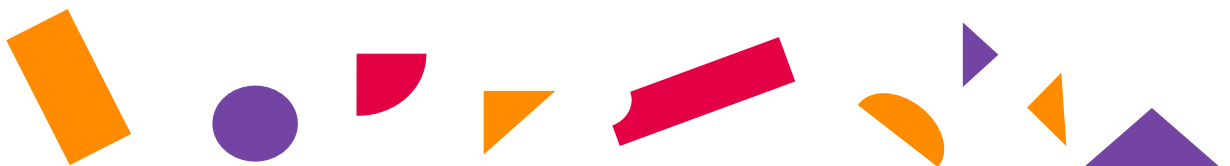
### Pack 1: Angles and shapes

Session A) 90 and 180 degrees

Session B) 360 degrees

Session C) Describing polygons

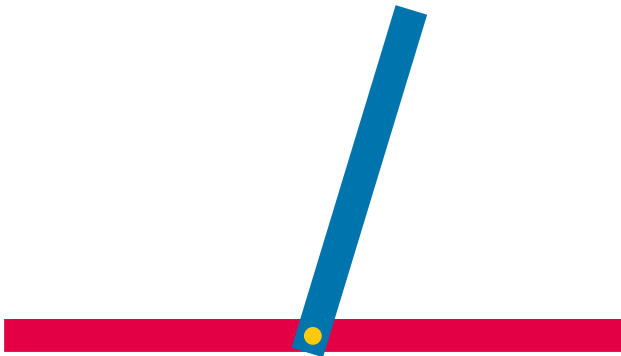
Session D) Composing shapes



# Pack 1 Session A

## Talk Task: $90^\circ$ and $180^\circ$

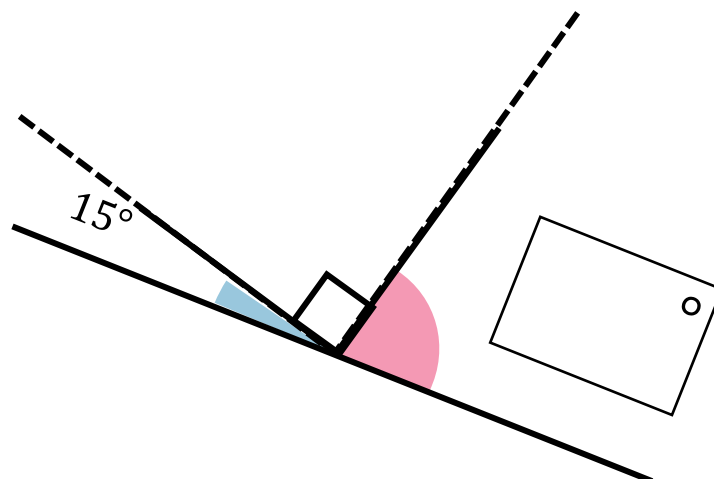
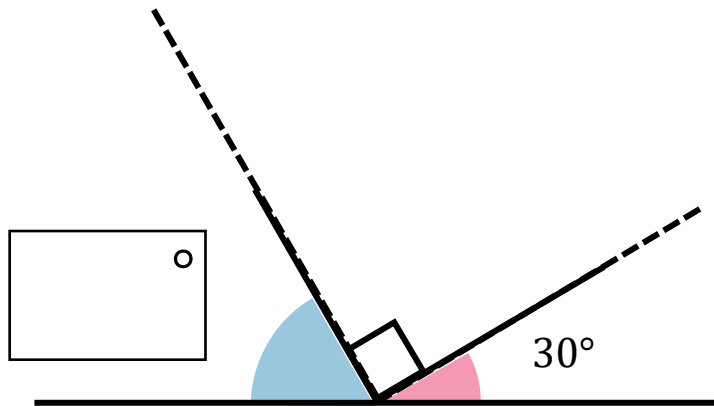
 always
 sometimes
 never



I can show two acute angles at the same time

I can show two obtuse angles at the same time

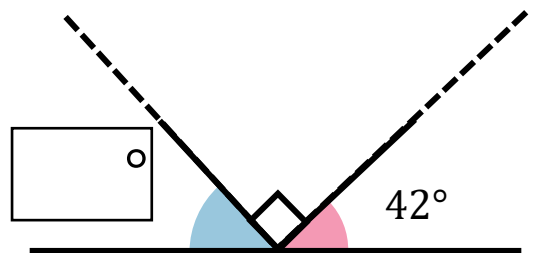
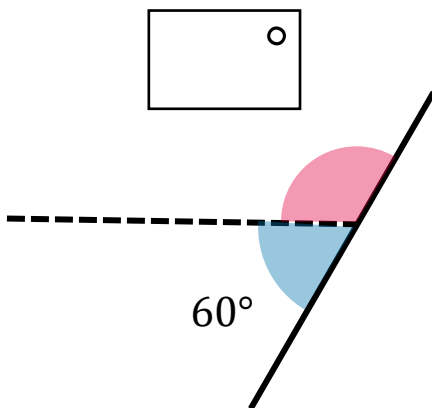
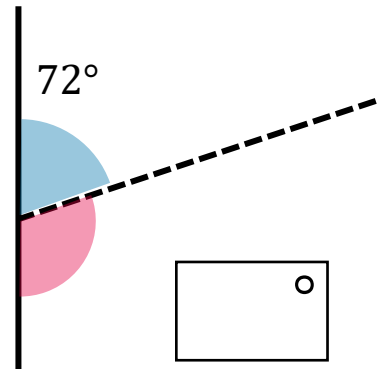
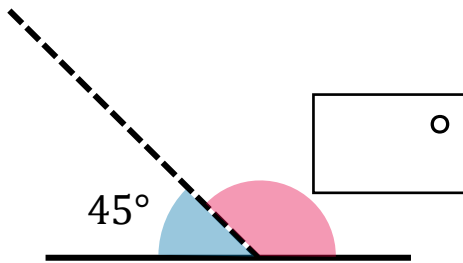
I can show an obtuse angle and an acute angle at the same time



Pack 1 Session A

**Activity:**  $90^\circ$  and  $180^\circ$

1) Calculate the missing angles



2) Draw a line to show approximately the angles

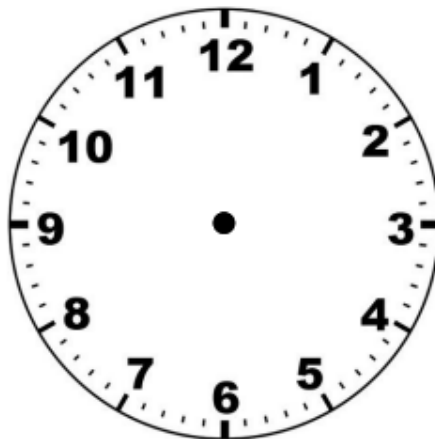
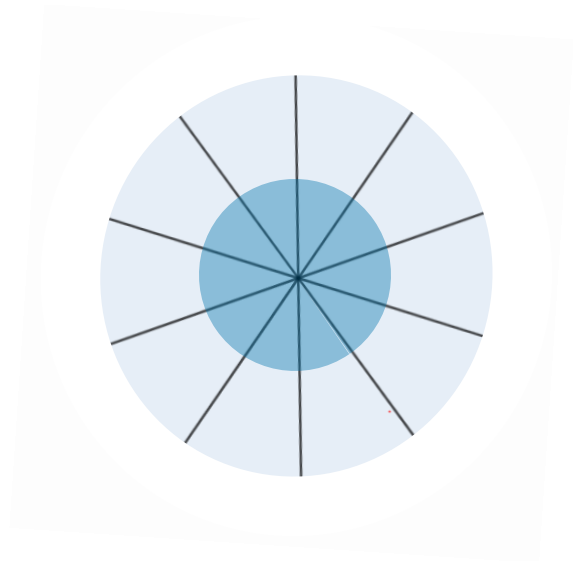
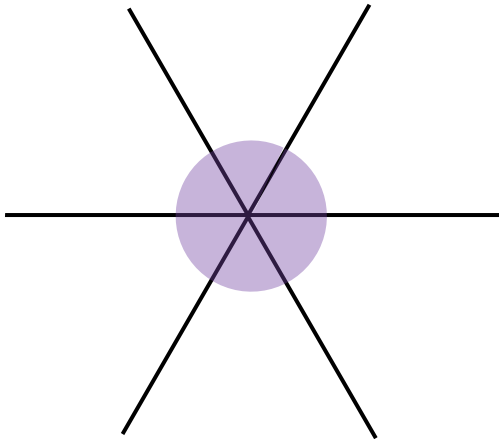
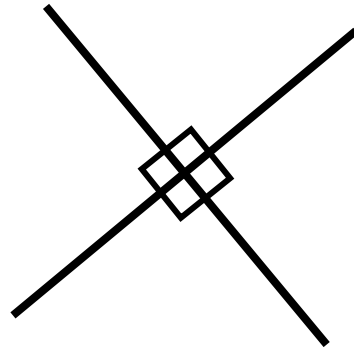
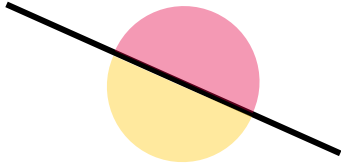
a)  $80^\circ$  and  $100^\circ$

b)  $20^\circ$  and  $160^\circ$



# Pack 1 Session B

## Talk Task: $360^\circ$

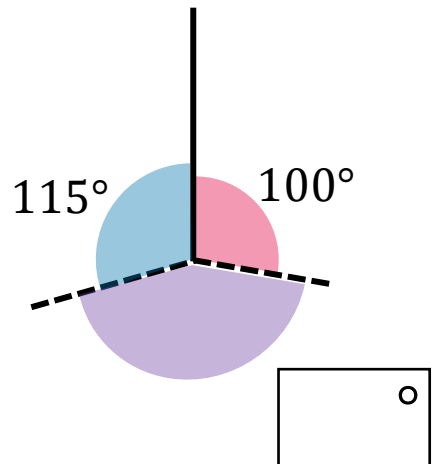
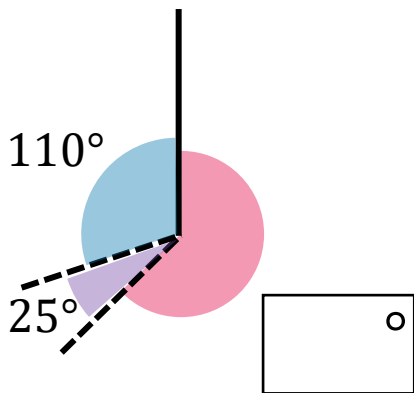
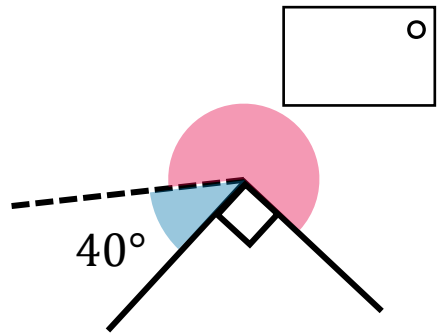
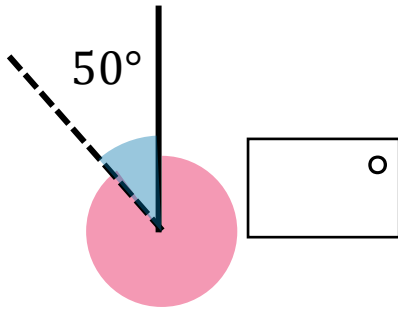


What other ways can you find to split  $360^\circ$ ?

Pack 1 Session B

**Activity:** 360°

1) Calculate the value of the missing angles




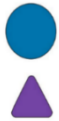
2) Sketch and label diagrams approximately showing the angles

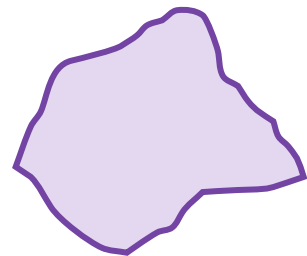
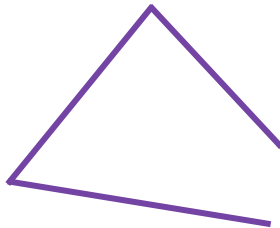
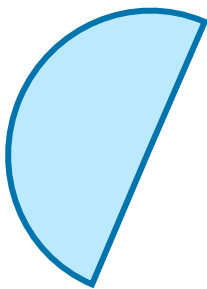
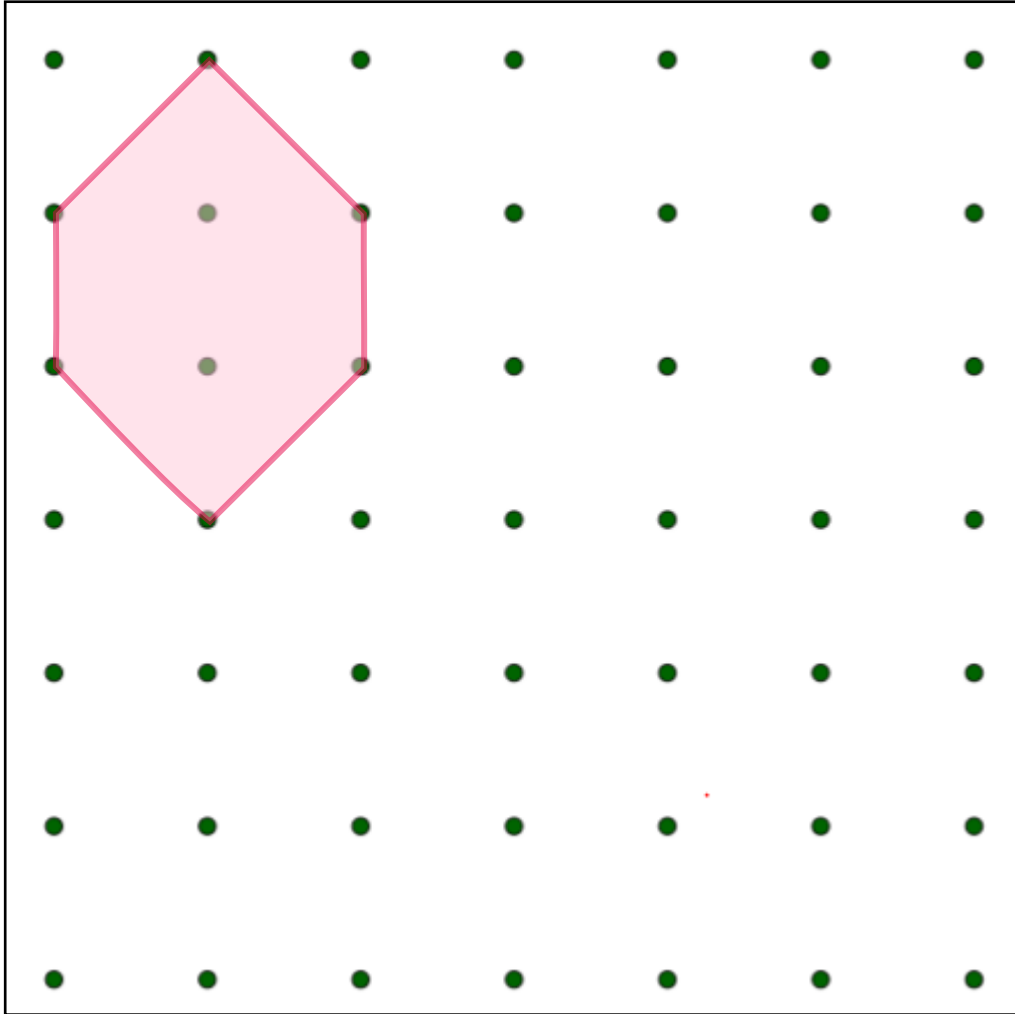
a) 160° and 200°

b) 90°, 120° and 150°

# Pack 1 Session C

## Talk Task: Describing polygons

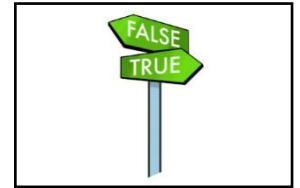
Examples	Non-examples
	



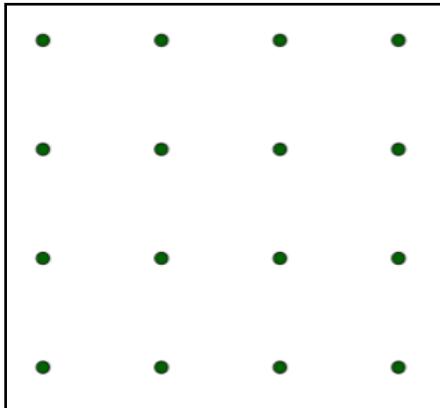


Pack 1 Session C

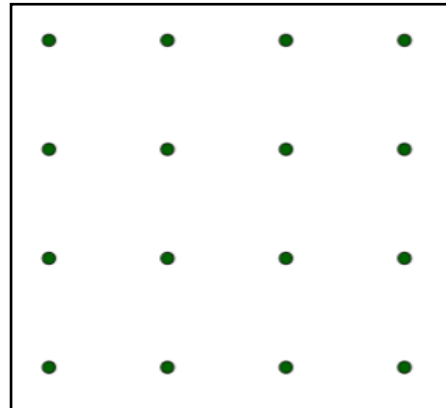
**Activity:** Describing polygons



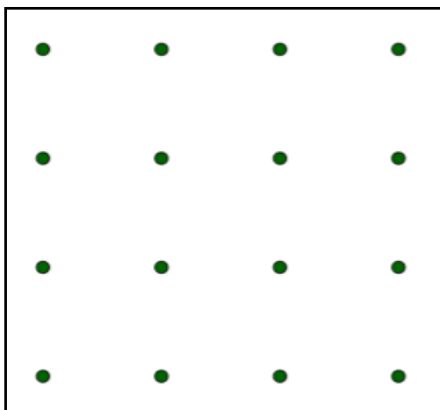
1) Is each one true or false? Show an example or if you think it is false, show how close you can get.



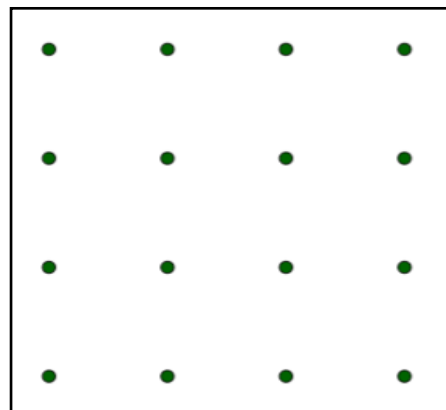
I can make a pentagon with two right angles



I can make a quadrilateral with three acute angles

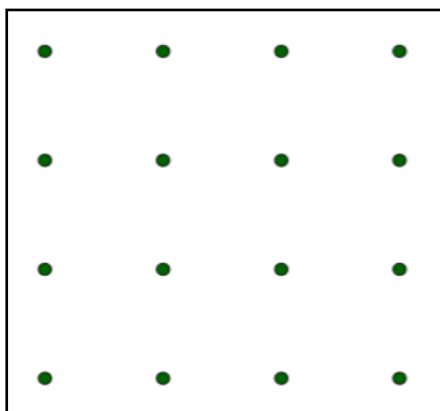


I can make a hexagon with two right angles

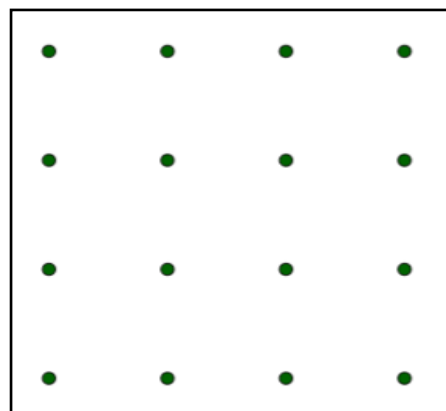


I can make a triangle with an acute angles

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



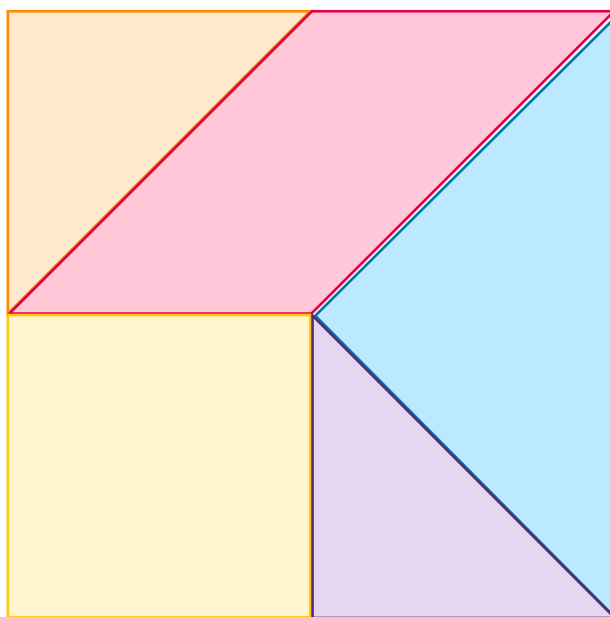
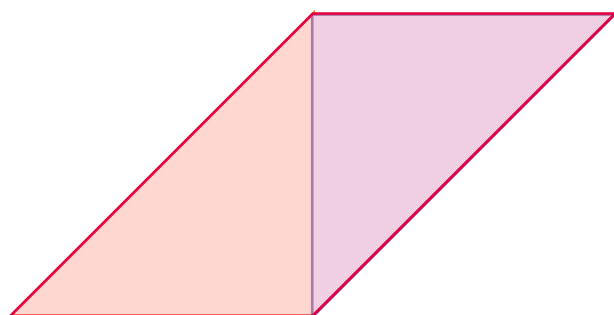
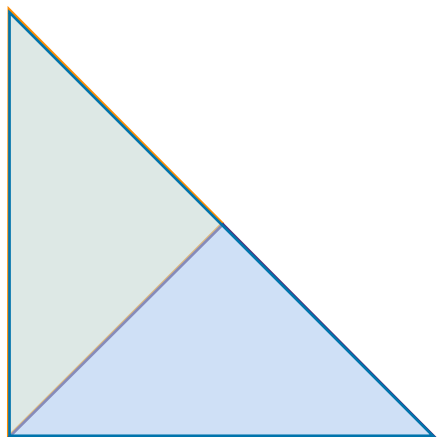
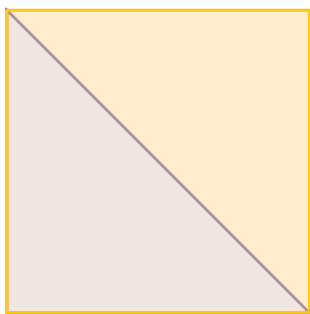
I can make \_\_\_\_\_  
\_\_\_\_\_



I can make \_\_\_\_\_  
\_\_\_\_\_

# Pack 1 Session D

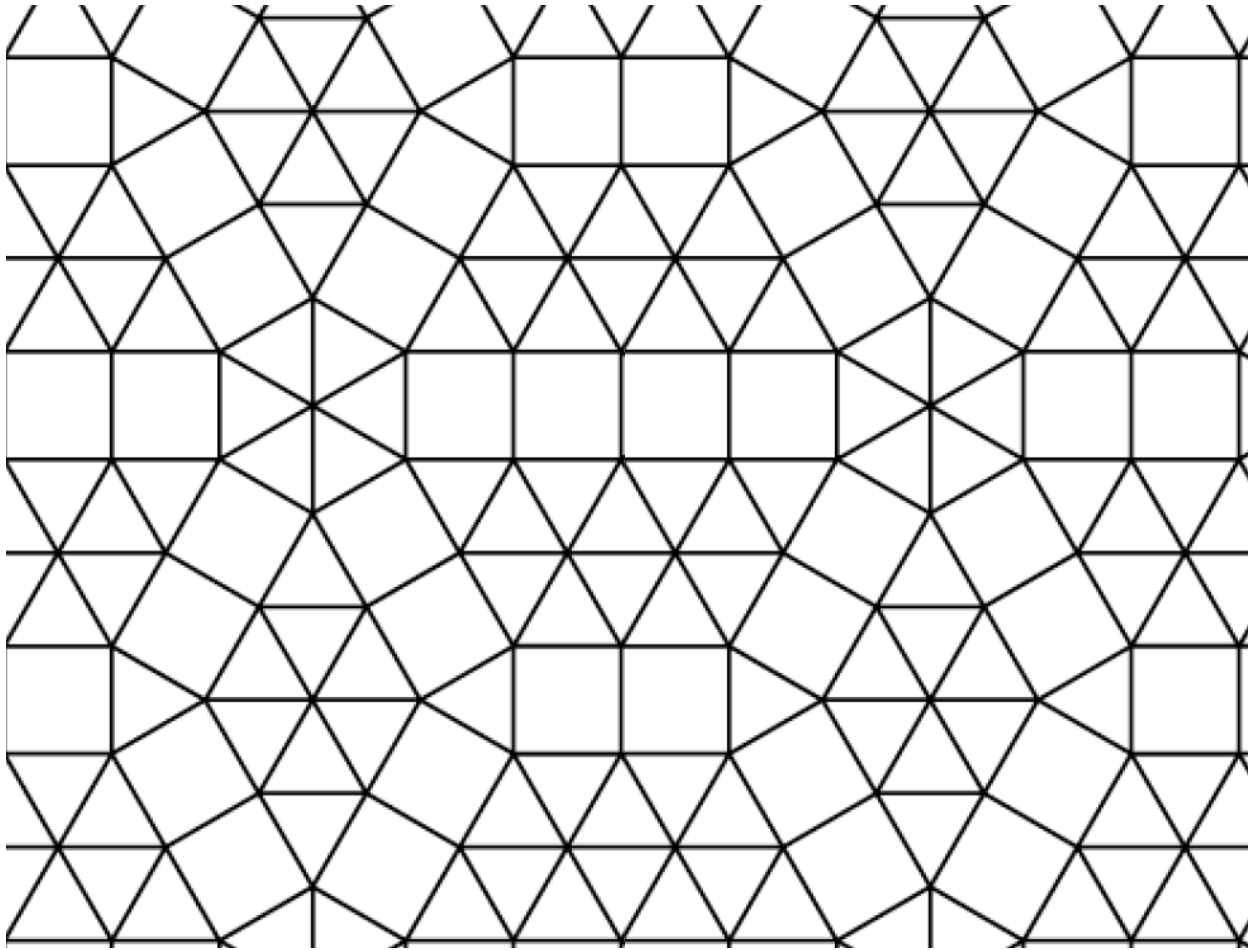
## Talk Task: Composing shapes



## 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

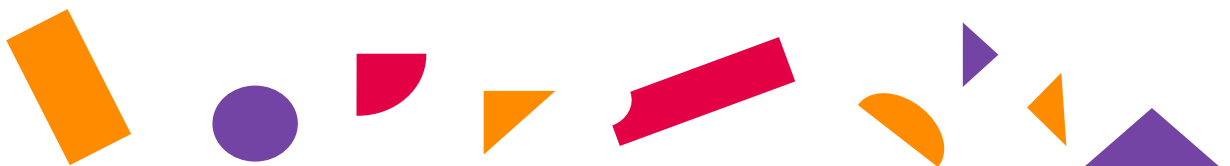
### Pack 2: Triangles

Session A) Creating triangles

Session B) Triangle symmetry

Session C) Describing triangles

Session D) Angles in triangles


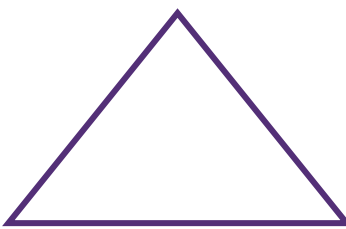
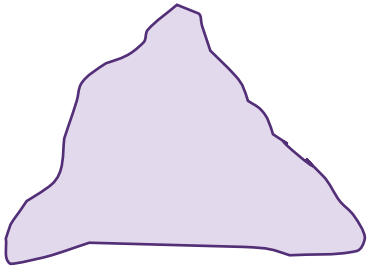
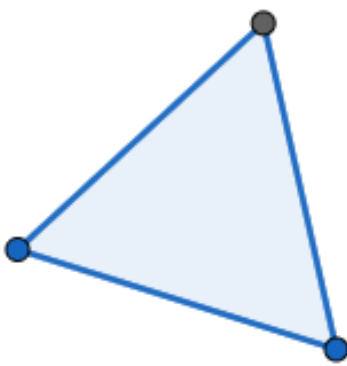
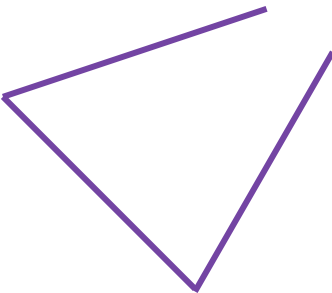
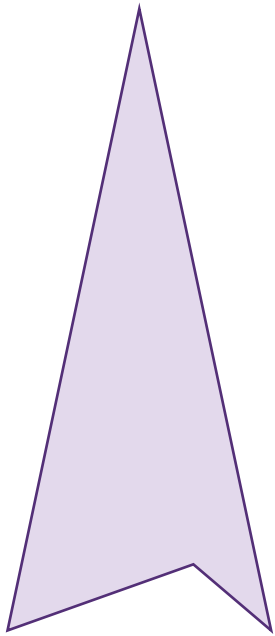
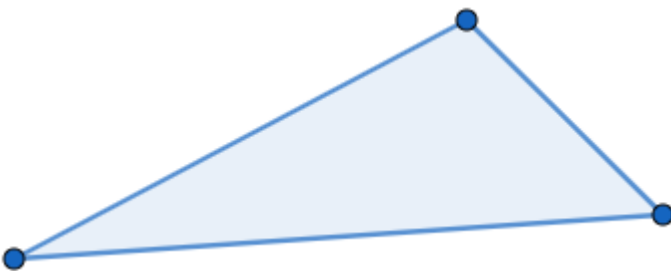


# Pack 2 Session A

## Talk Task: Creating triangles

 always
 sometimes
 never

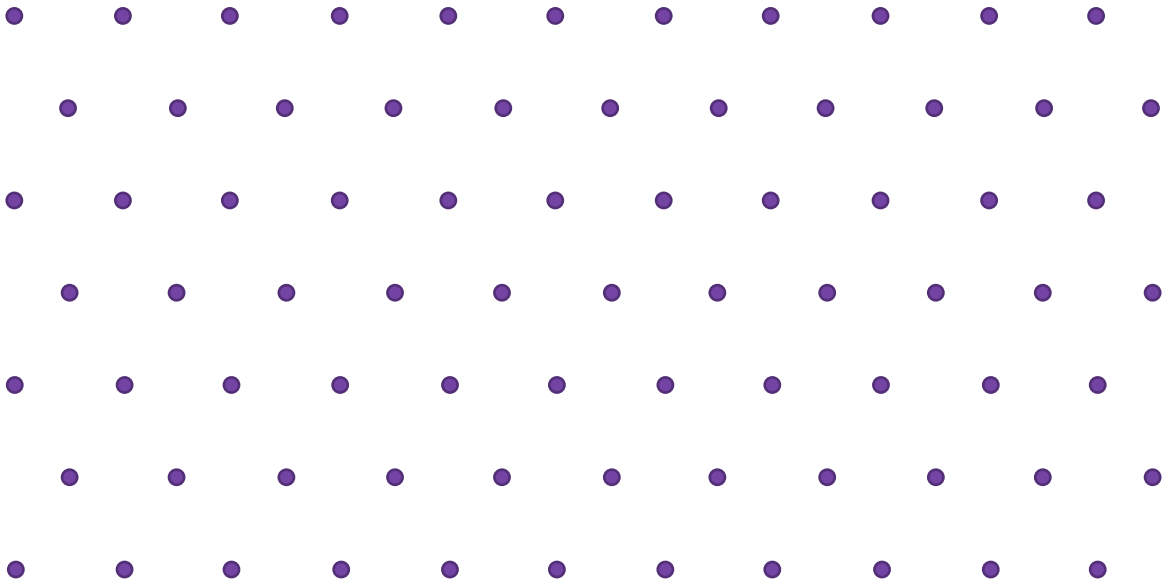
Joining three points with straight lines will form a triangle

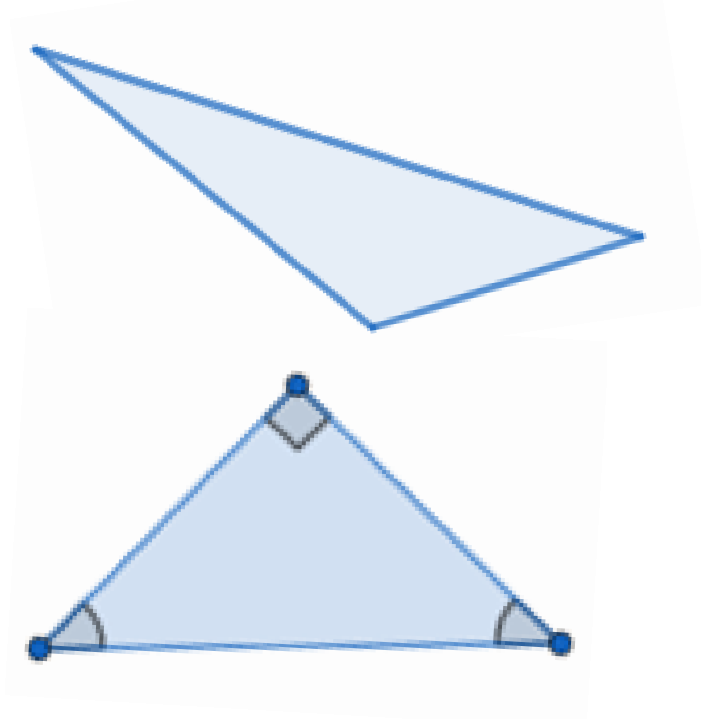
## Pack 2 Session A

### Activity: Creating triangles

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

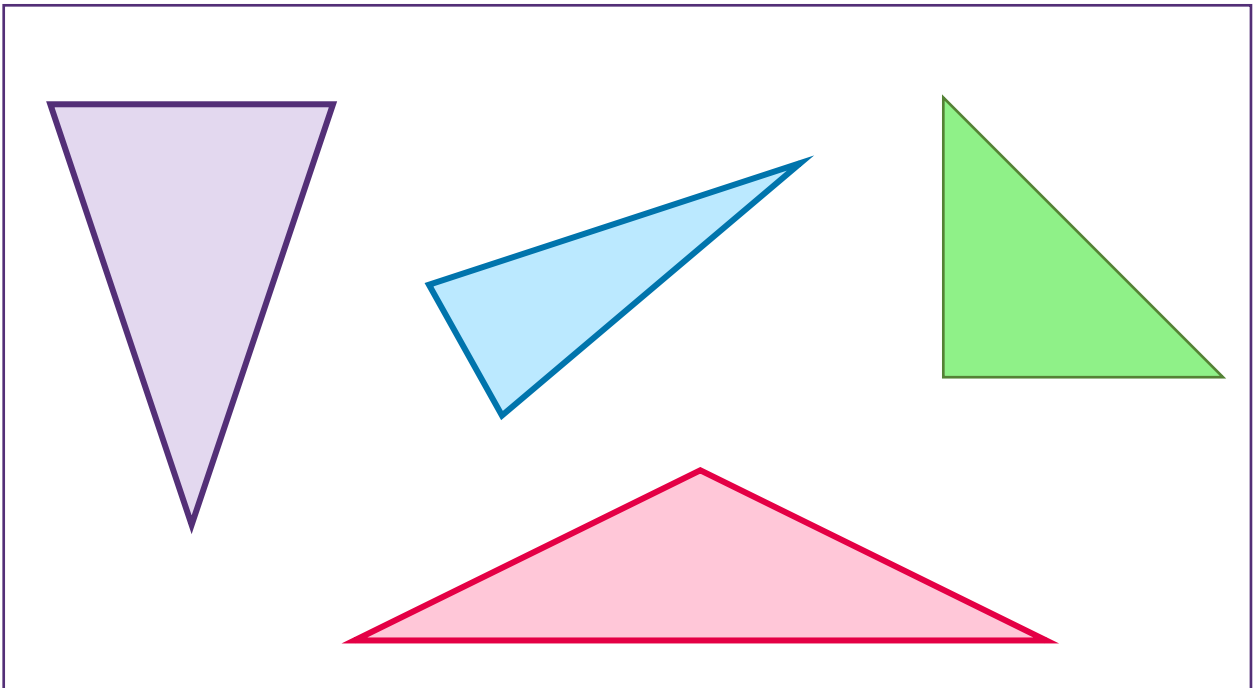
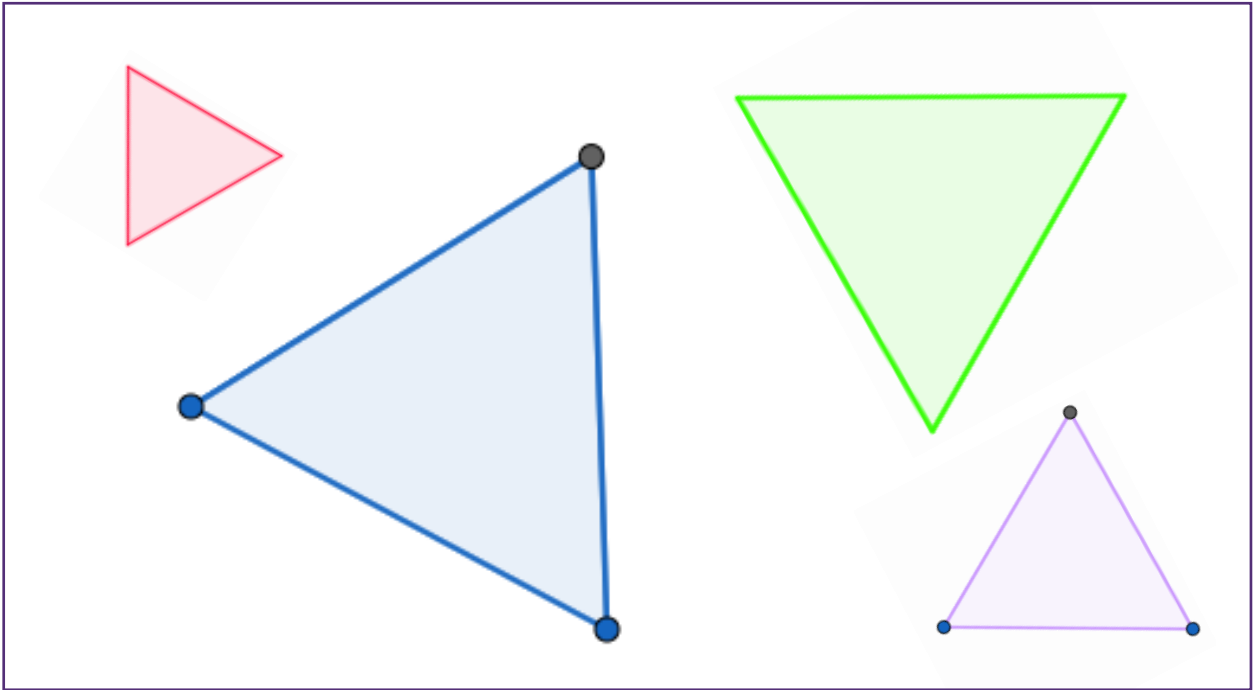
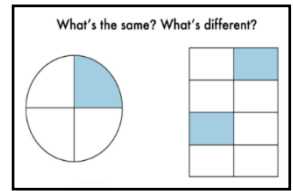


- 2) Describe the angles as acute, obtuse or right angle.



# Pack 2 Session B

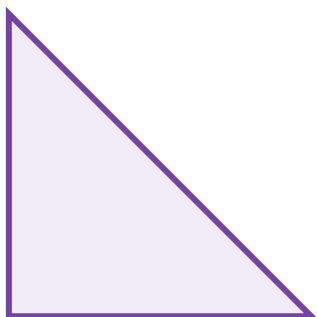
## Talk Task: Triangle symmetry



## Pack 2 Session B

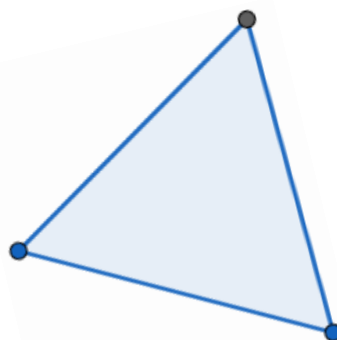
### Activity: Triangle symmetry

- 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 \_\_\_\_\_

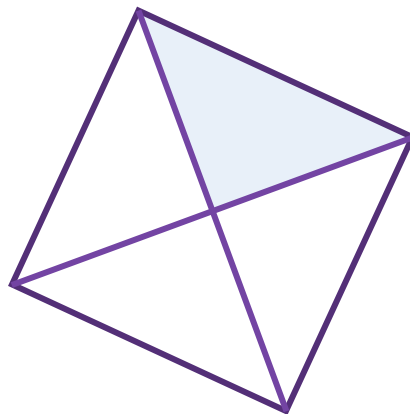
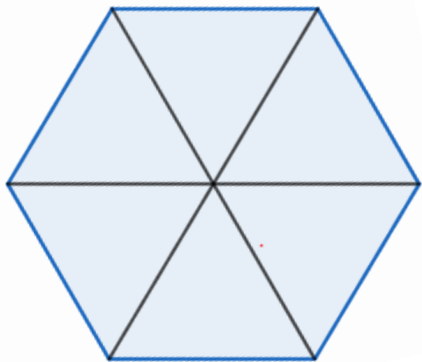
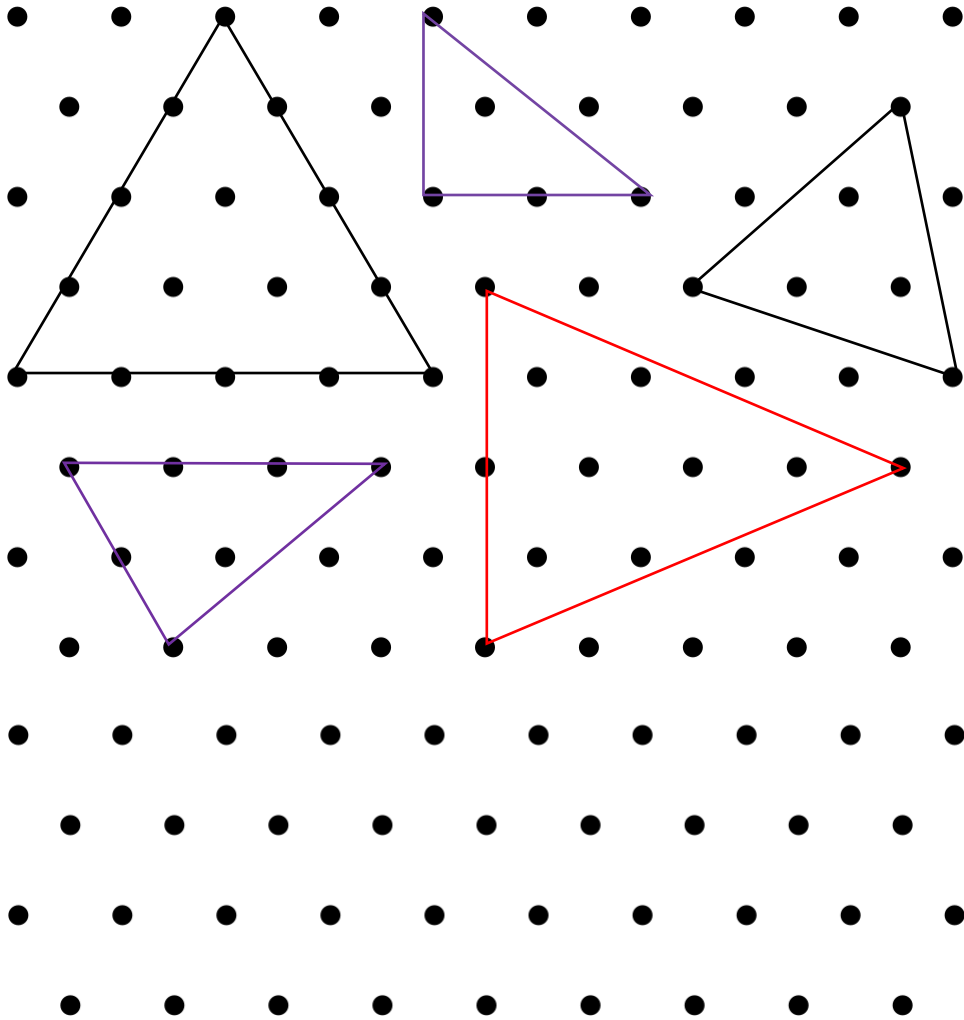
\_\_\_\_\_  
\_\_\_\_\_

- 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

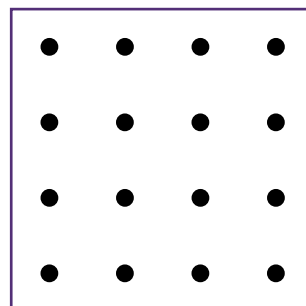
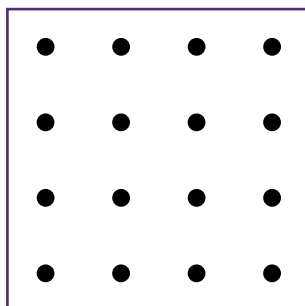
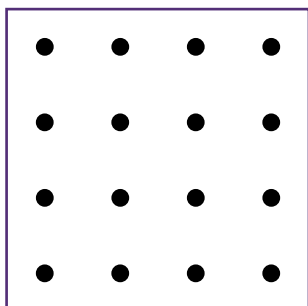
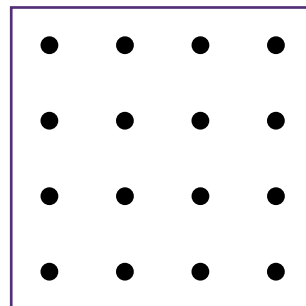
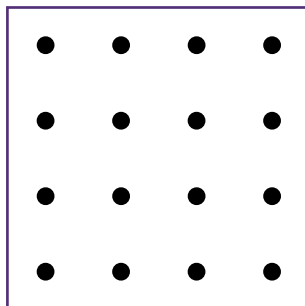
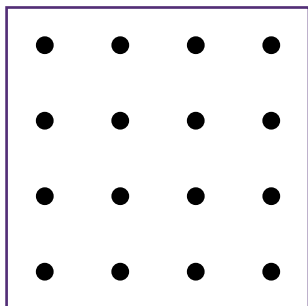
## Talk Task: Describing triangles



## Pack 2 Session C

### Activity: Describing triangles

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

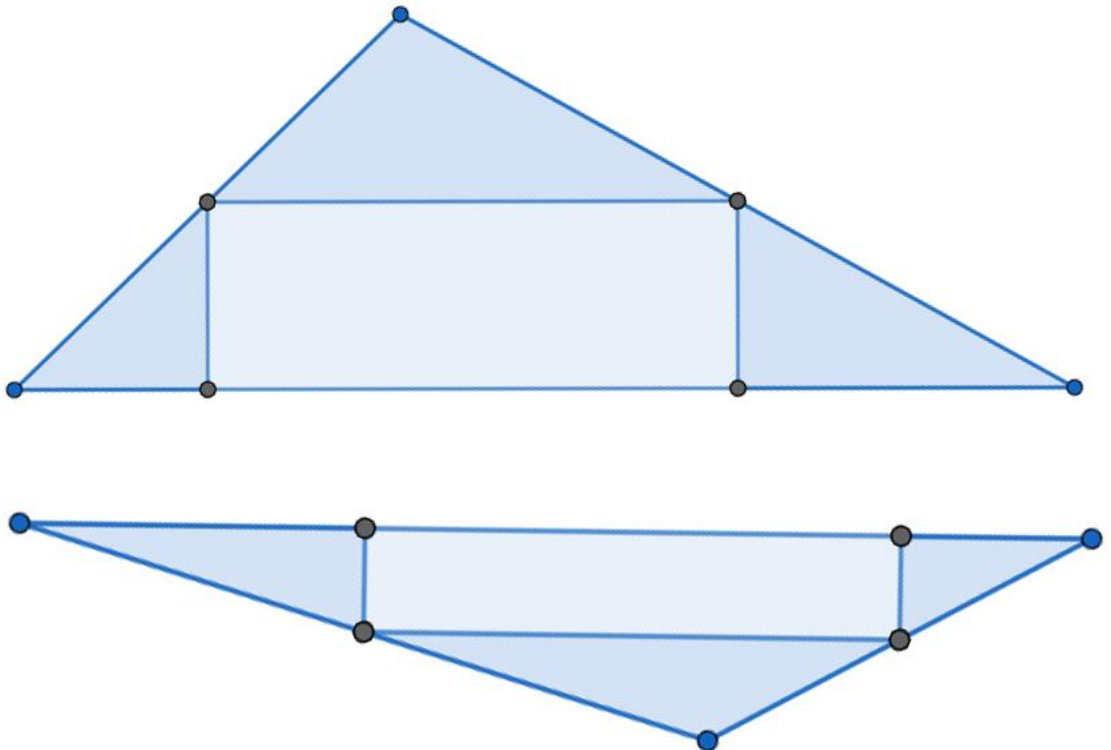
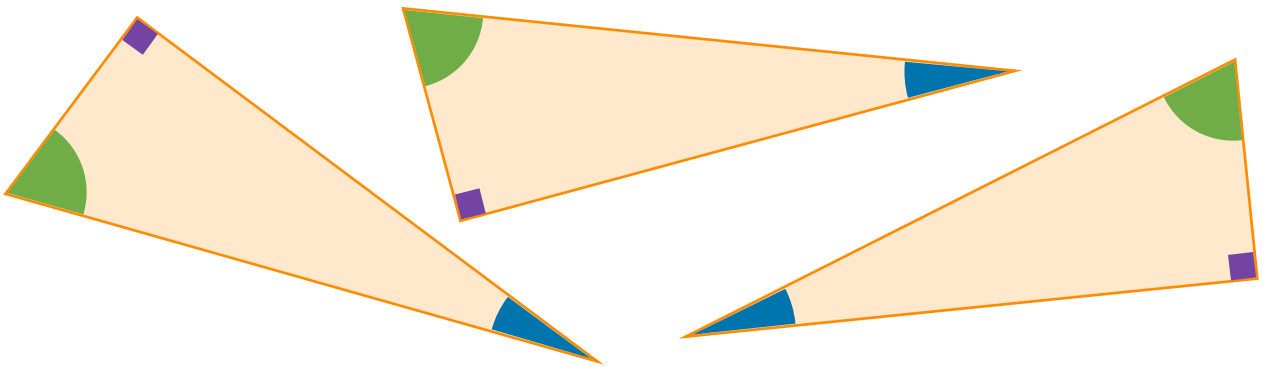
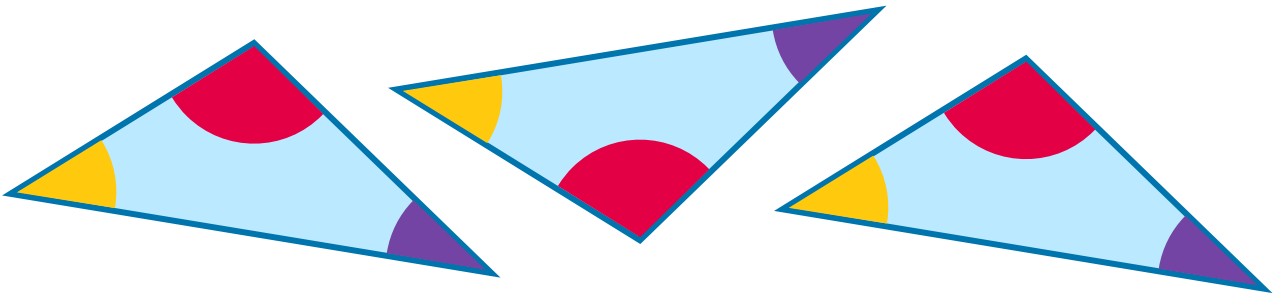


- 2) Try to draw a triangle for each section of the table.

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

# Pack 2 Session D

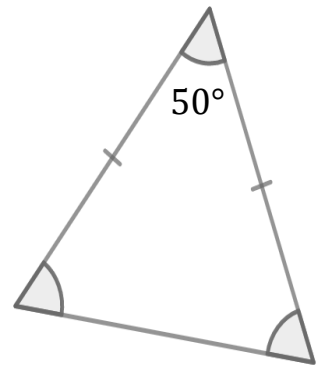
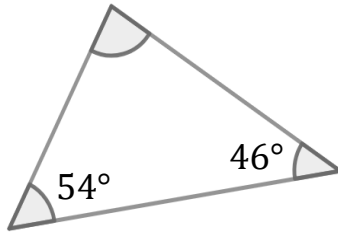
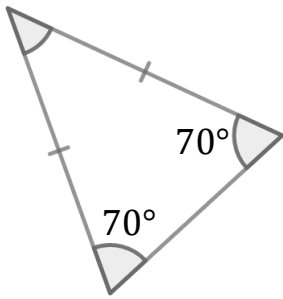
## Talk Task: Angles in triangles



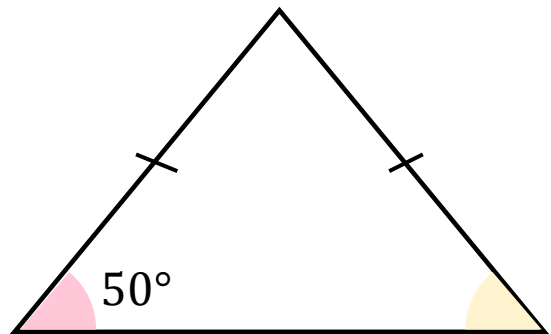
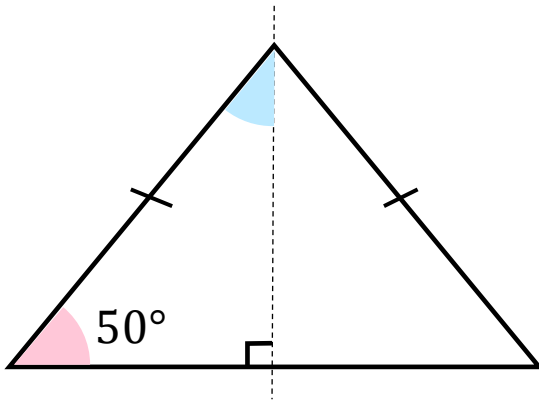
Pack 2 Session D

**Activity:** Angles in triangles

1) Calculate the size of each missing angle.

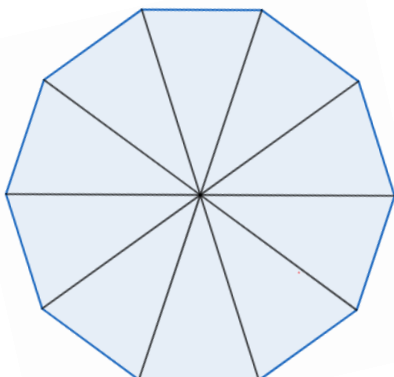


2) Write descriptions of two different ways to find the angles in this isosceles triangle. Write each angle in the triangles.





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

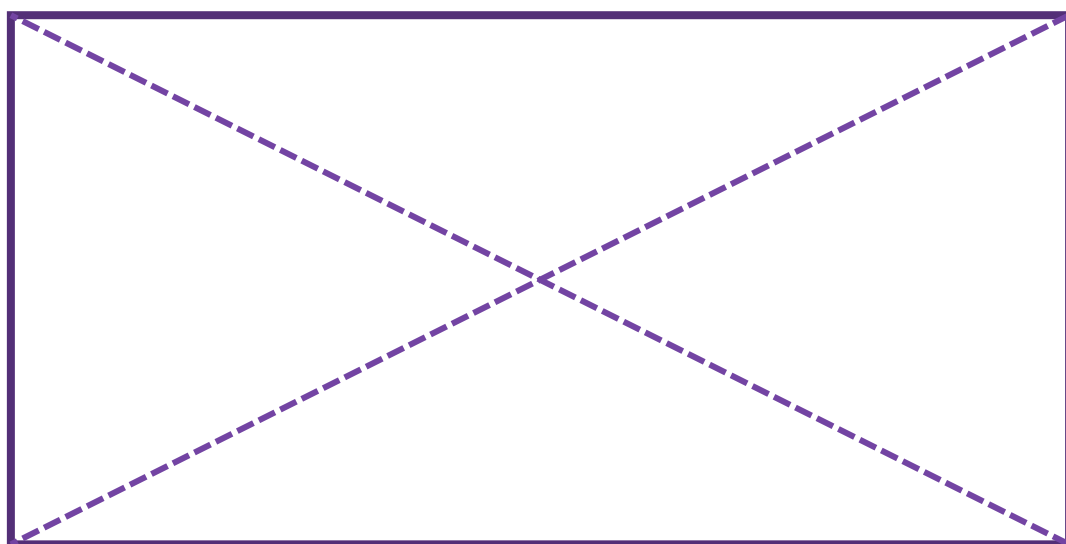
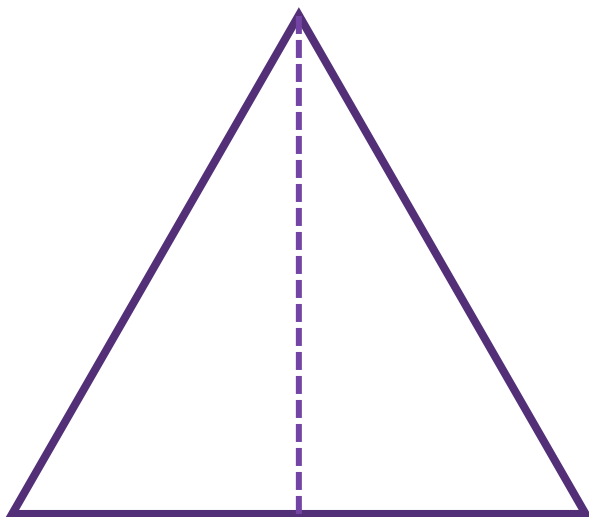
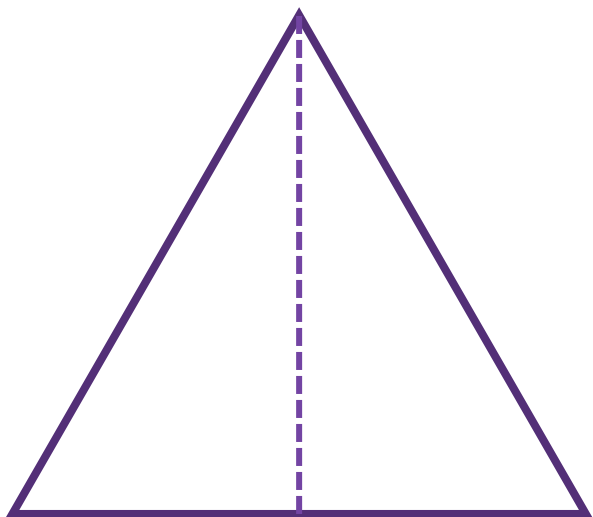
Session C) Angles in quadrilaterals

Session D) Describing quadrilaterals



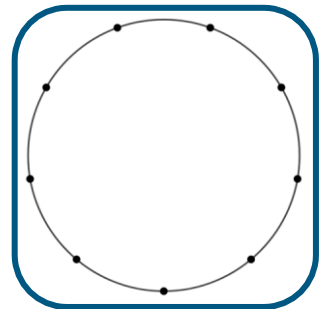
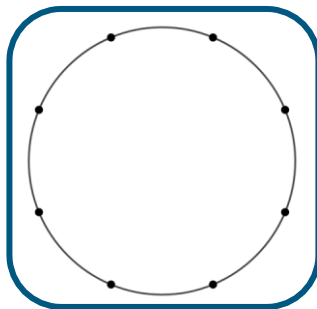
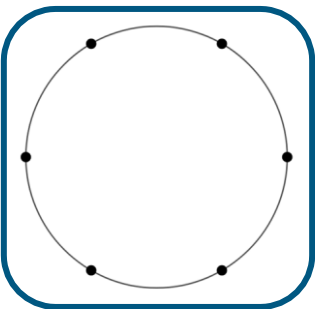
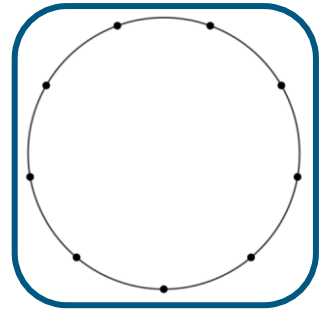
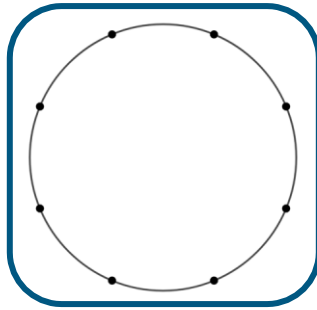
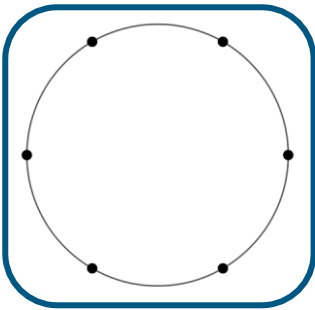
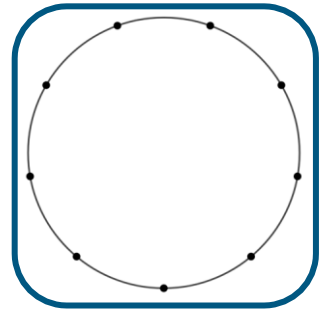
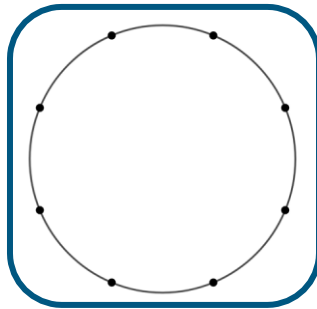
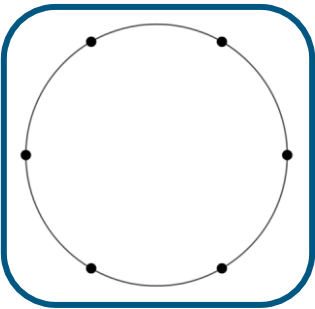
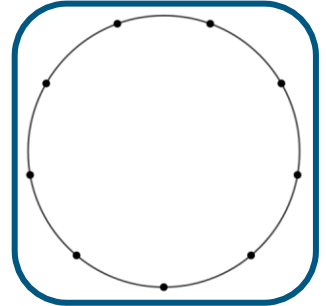
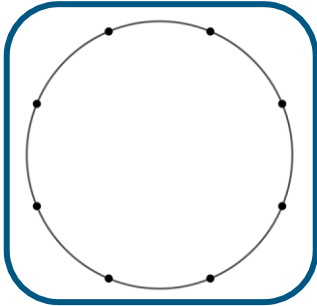
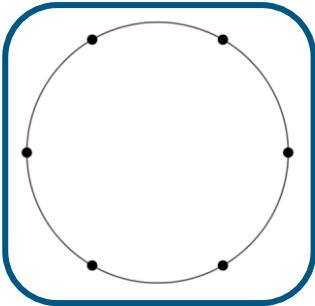
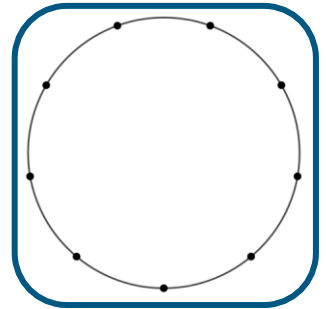
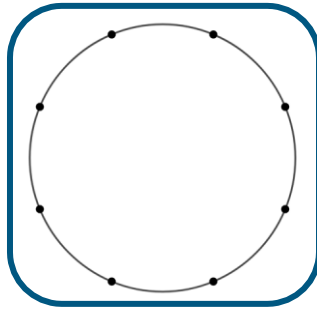
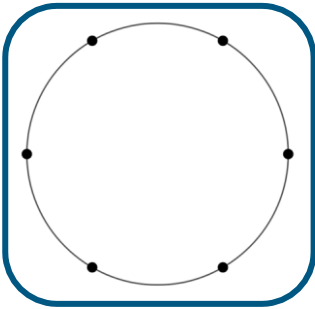
Pack 3 Session A

**Talk Task:** Creating quadrilaterals



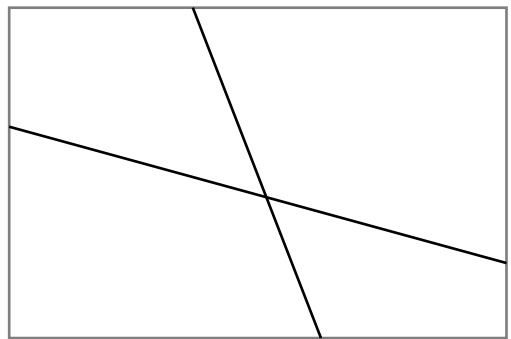
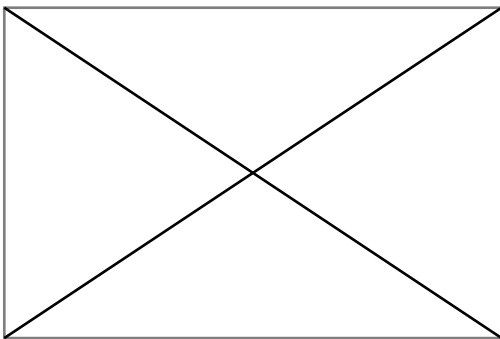
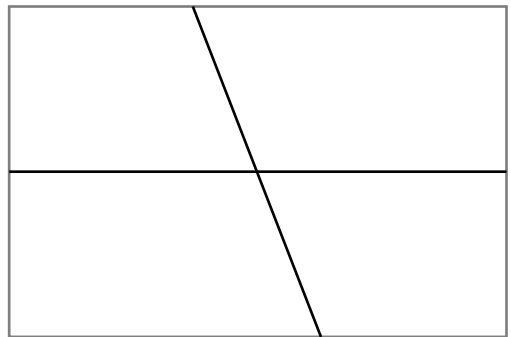
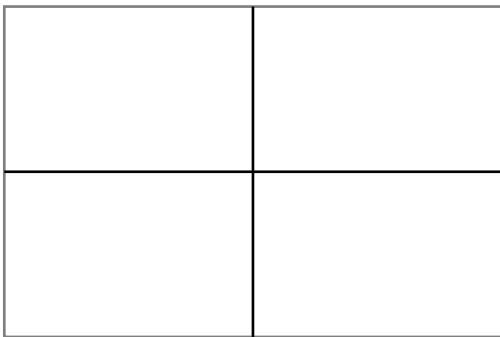
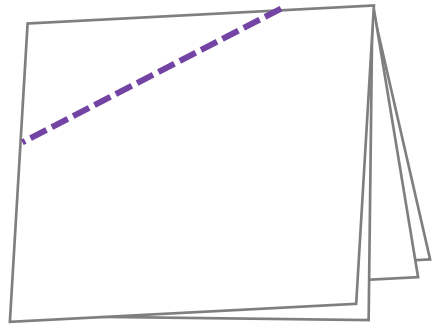
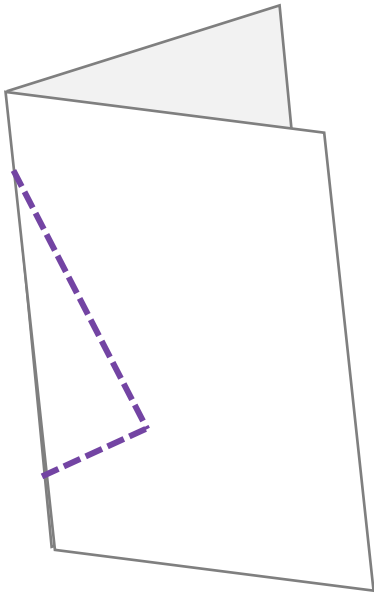
Pack 3 Session A

**Activity:** Creating quadrilaterals



# Pack 3 Session B

## Talk Task: Quadrilateral symmetry

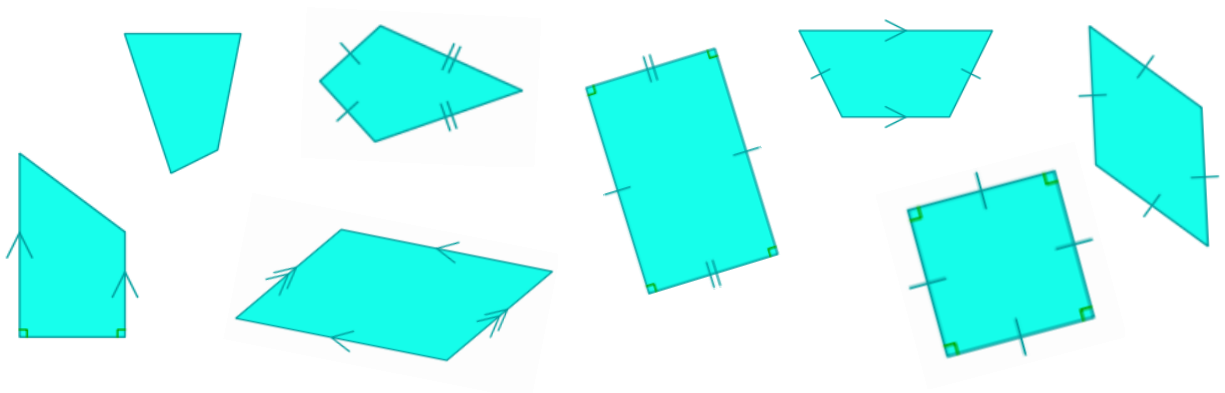


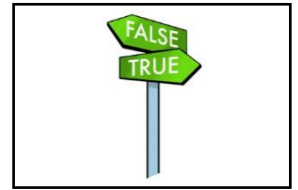


Pack 3 Session B

**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



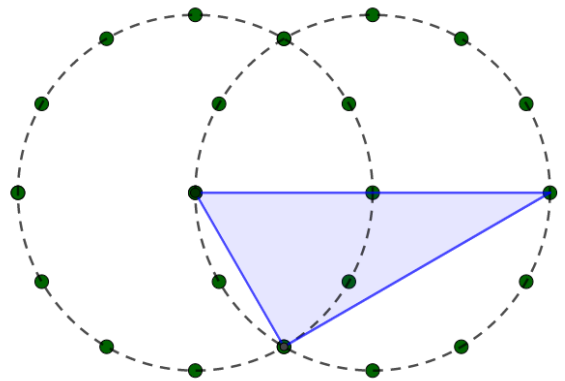
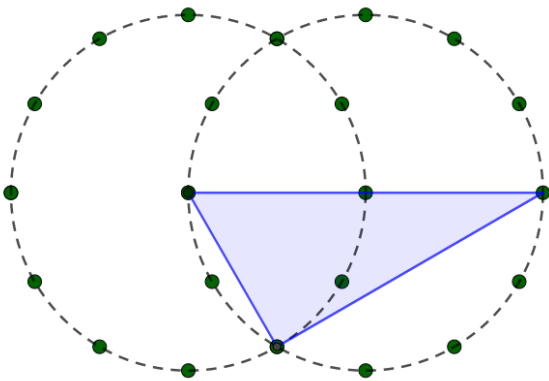
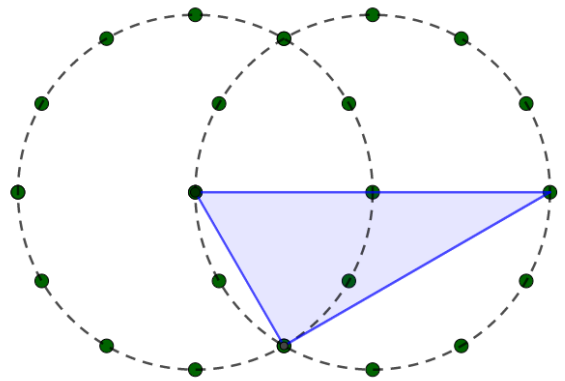
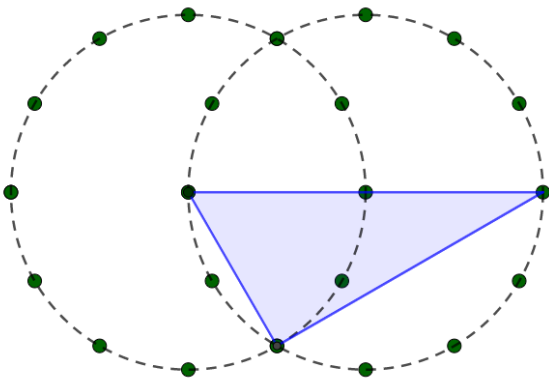
A parallelogram is a rectangle



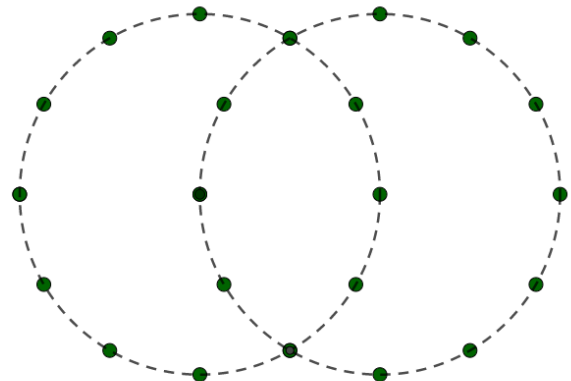
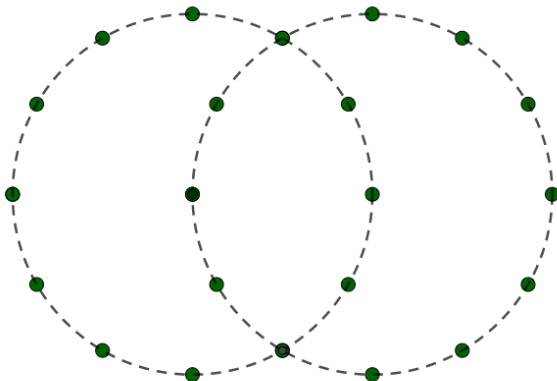
Pack 3 Session D

**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

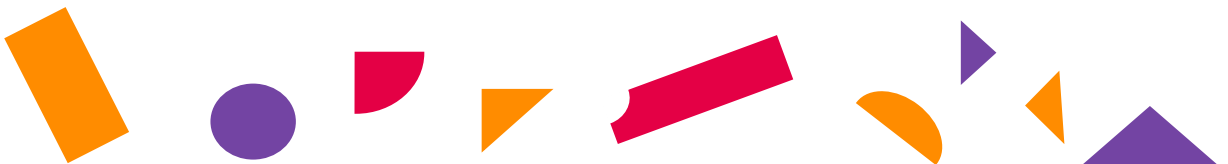
### Pack 4: Area

Session A) What is area?

Session B) Area and arrays

Session C) Squared units

Session D) Exploring area



# Pack 4 Session A

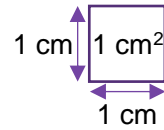
## Talk Task: What is area?

surface

squared centimetres

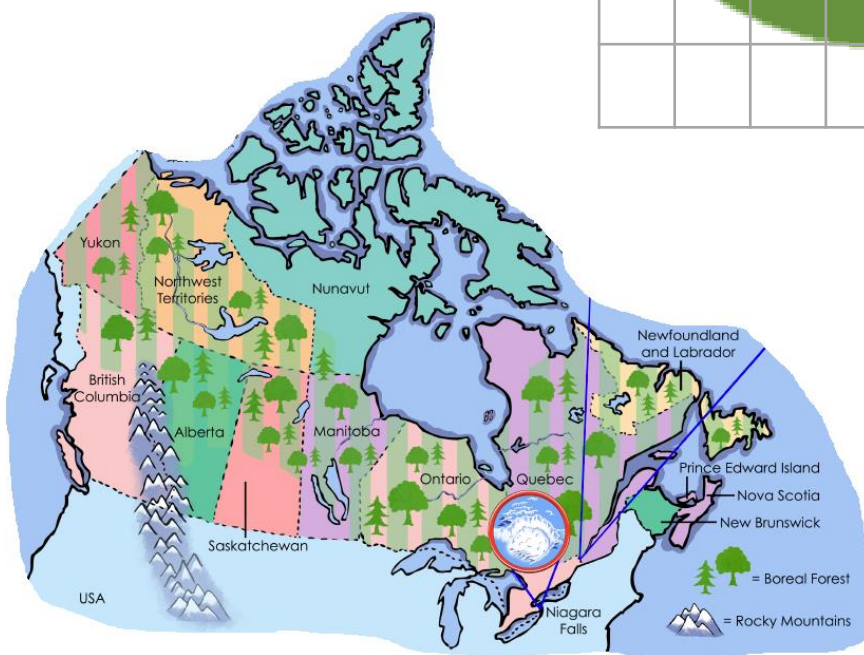
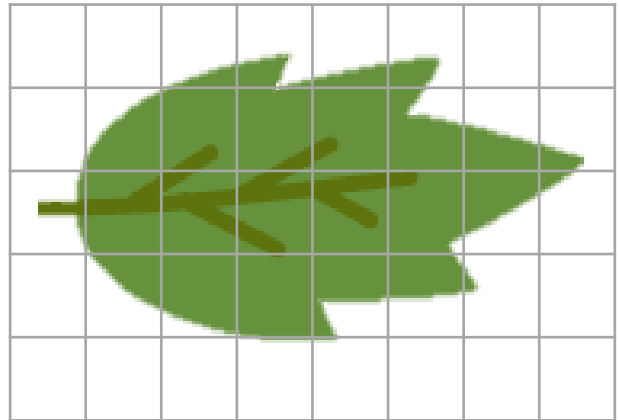
dimension

# area



rectangles  
(including squares)

multiplication

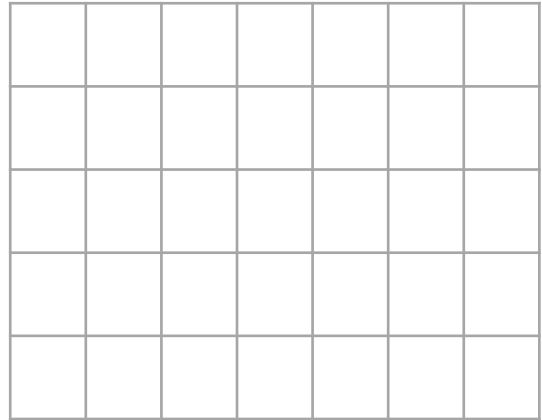
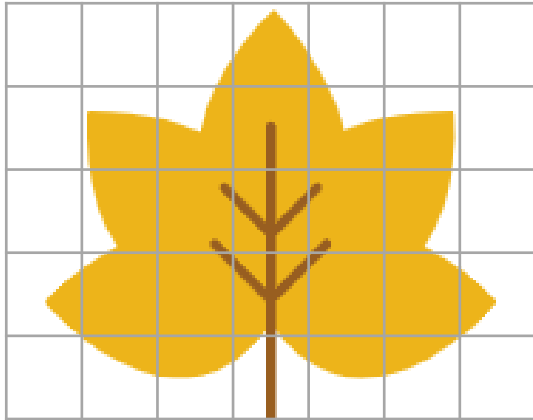


1 million  
squared  
kilometres

## 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  $14 \text{ cm}^2$

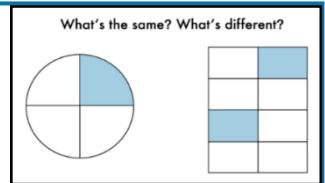
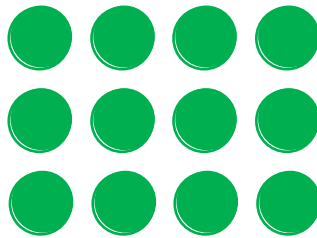
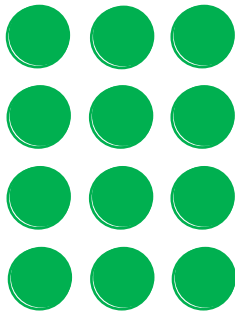


- 2) How many of this sheet of paper will cover the table you are working on? Draw a sketch to show how you worked it out.

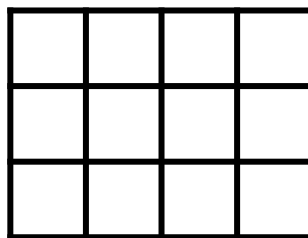
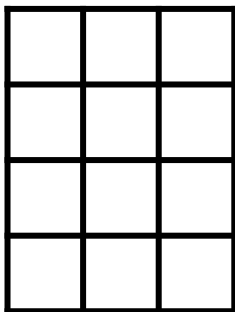


Pack 4 Session B  
**Talk Task:** Area and arrays

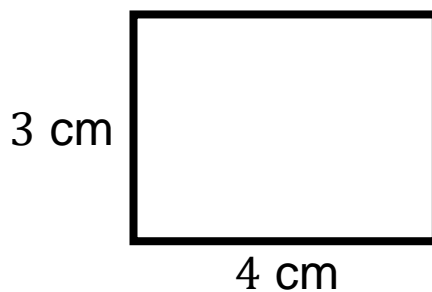
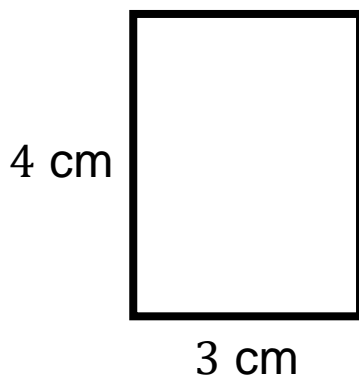
Repeat of Pack 2 Session B  
**Talk Task:** Arrays and area of rectangles



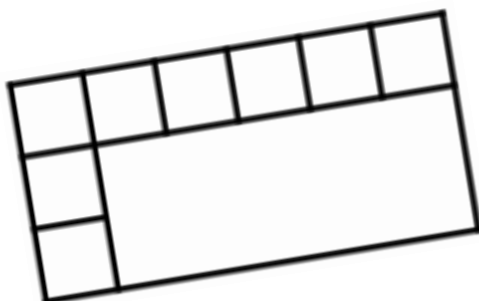
counters



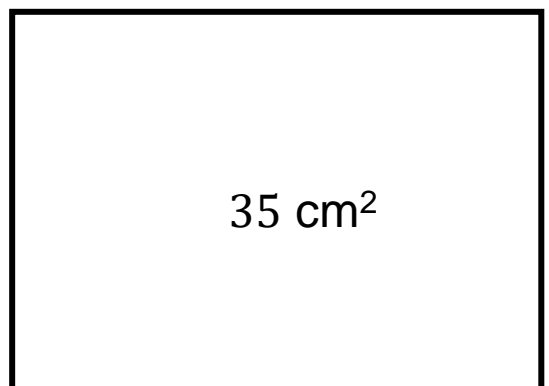
squares



cm<sup>2</sup>  
 squared  
 centimetres



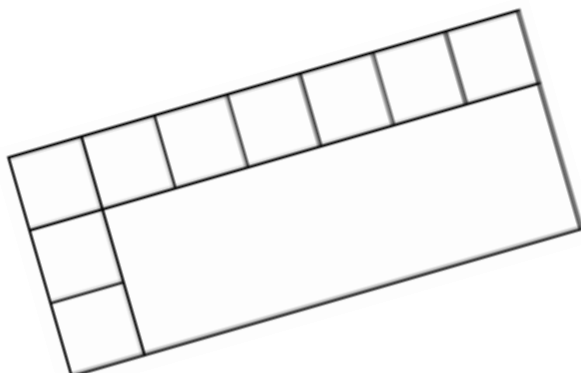
5 cm



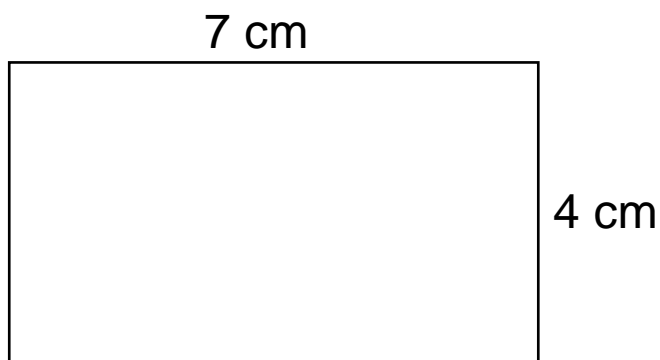
Pack 4 Session B

**Activity:** Area and arrays

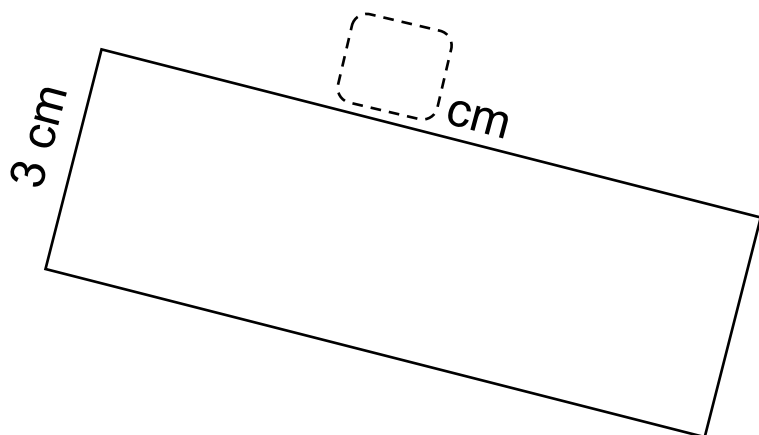
1) Work out and write down the area of each shape



Area:  
 cm<sup>2</sup>



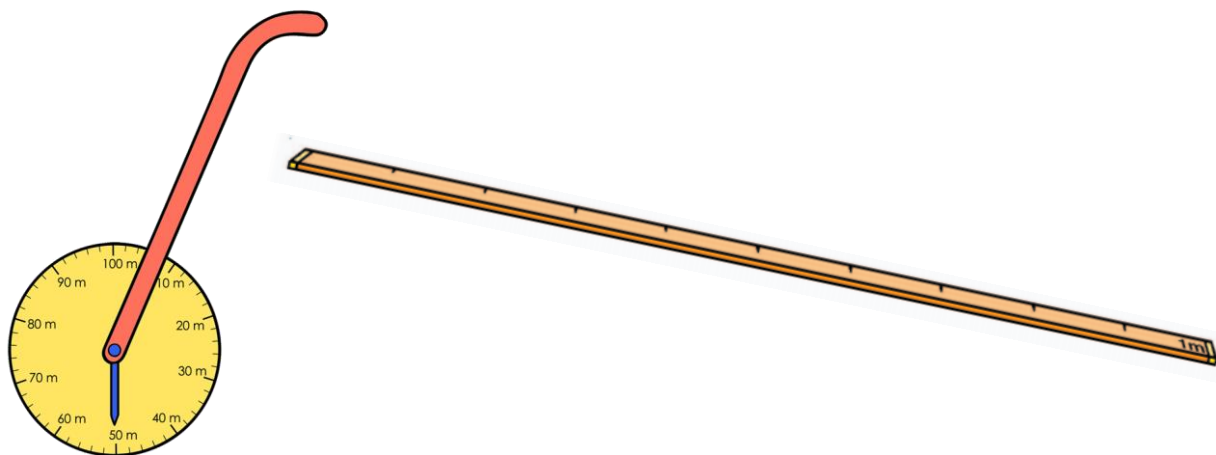
Area:



Area:  
27 cm<sup>2</sup>

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 m<sup>2</sup> must be the  
same as 100 cm<sup>2</sup>



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

\_\_\_\_\_

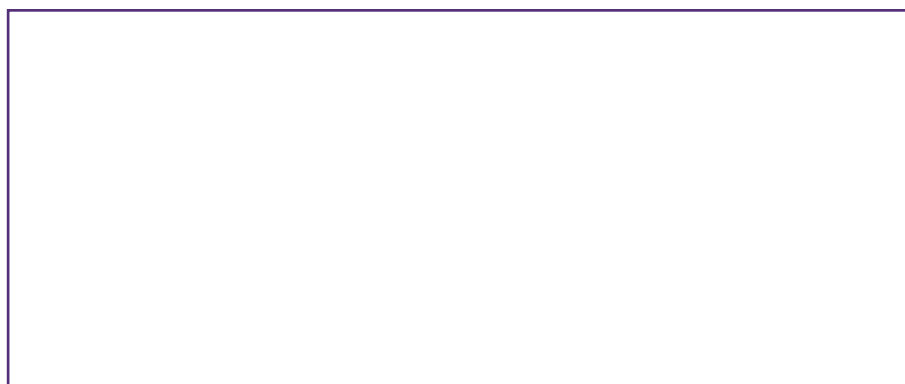
Tiles to cover a bathroom floor

\_\_\_\_\_

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

1 m and 20 cm

50 cm



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

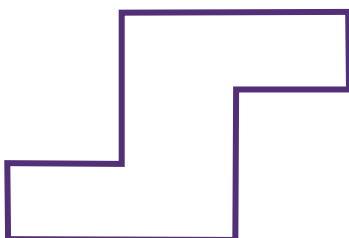
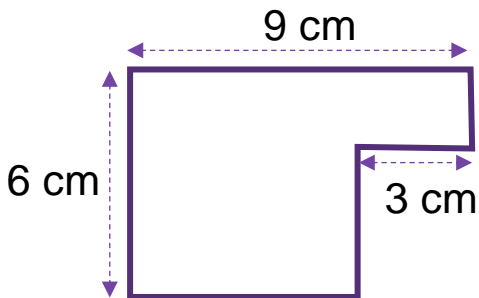
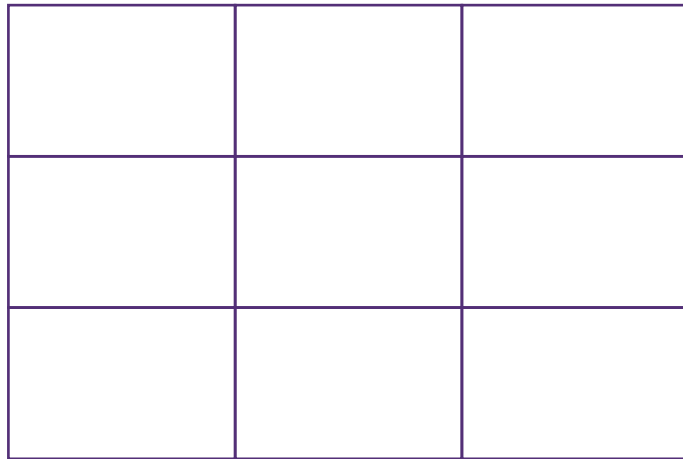
cm<sup>2</sup> squared centimetres

m<sup>2</sup> squared metres

km<sup>2</sup> squared kilometres

# Pack 4 Session D

## Talk Task: Exploring area

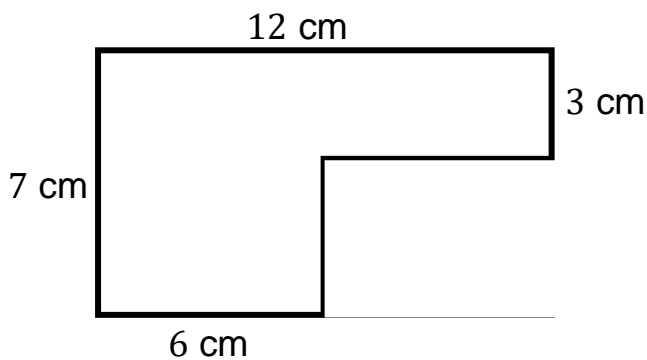
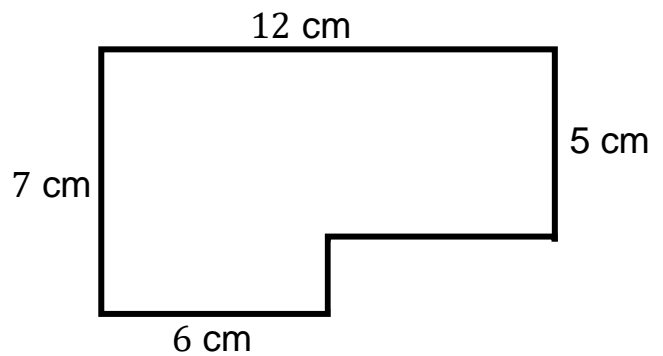
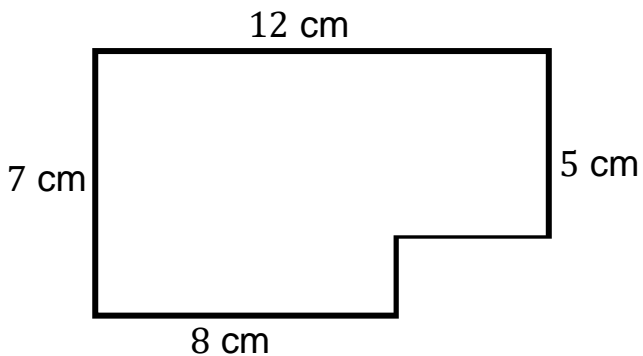
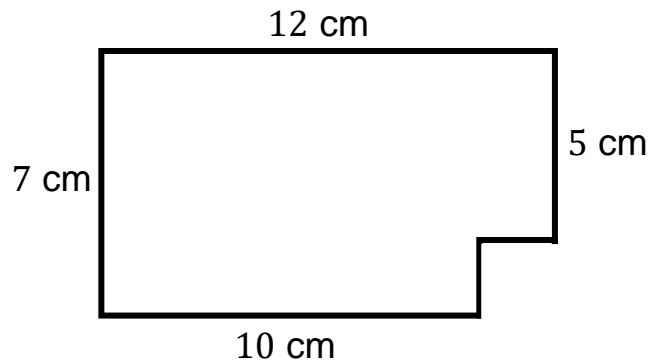
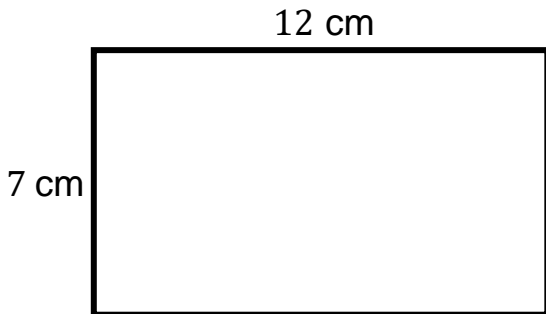


NOT DRAWN TO SCALE

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

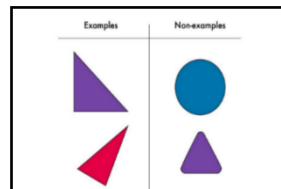
Session C) Comparing numbers

Session D) Greater than and less than



# Pack 5 Session A

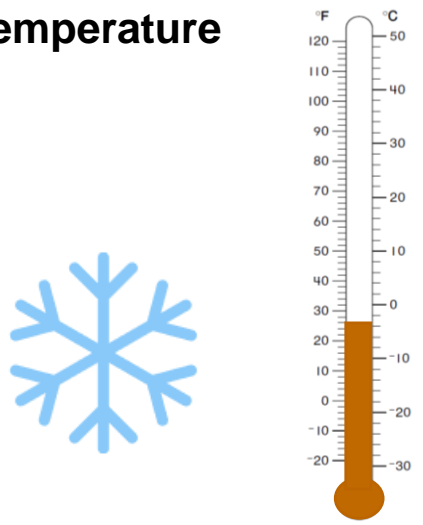
## Talk Task: Positive and negative numbers



### Below ground



### Temperature



### Debt

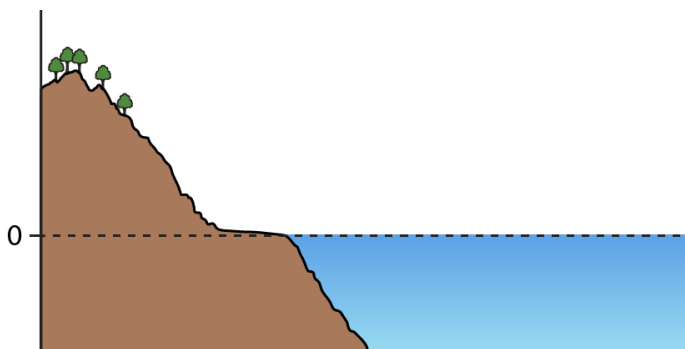


I have £20 in my bank account.  
I spend £30.

My bank statement says  $-\pounds 10$



### Sea level



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





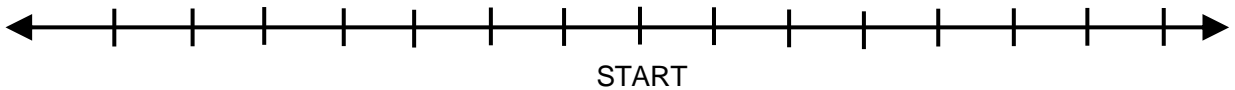
## Pack 5 Session A

### Activity: Positive and negative numbers

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



W ← → E



From START, move two steps east.      +2

From START, move two steps west      -2

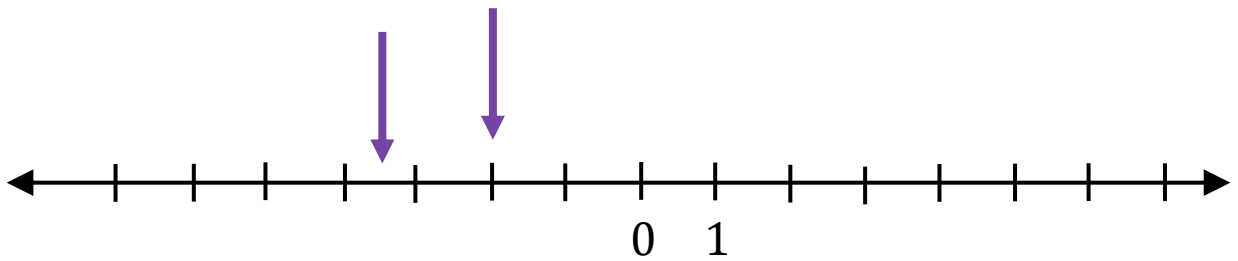
- a) From START, move 5 steps east.
- b) From START, move 3 steps west
- c) From START, move 2 steps east and then 4 steps east
- d) From START, move 2 steps west and then 3 steps west
- e) From START, move 3 steps east then 4 steps west
- f) From START, move 1 steps west then 4 steps east


- 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



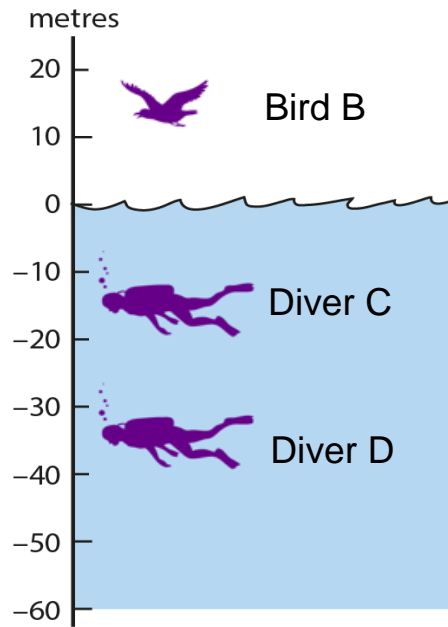
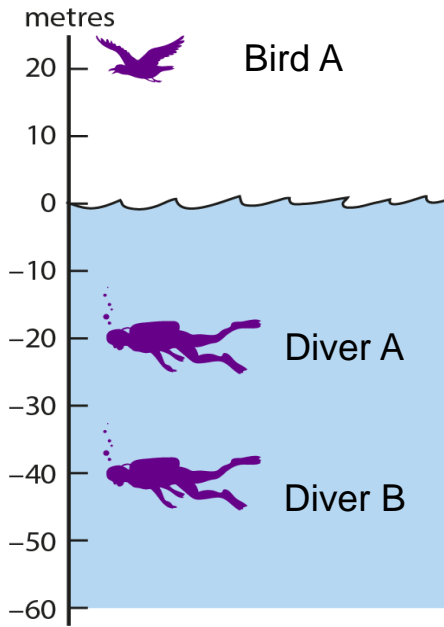
Desert 35°C



## Pack 5 Session B

### Activity: Extending the number line

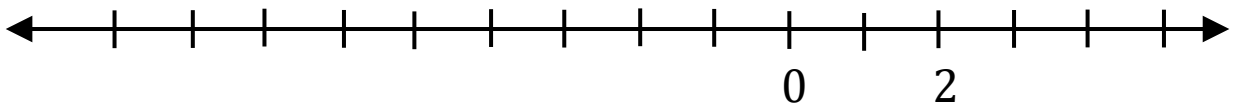
1) Use the images to match the information.



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.

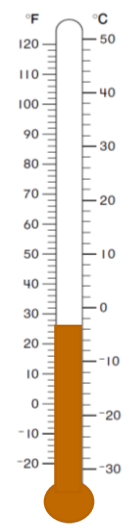
- a) -2      b) 3.5      c) +1      d) -4.5      e) -8



## Pack 5 Session C

### Talk Task: Comparing numbers

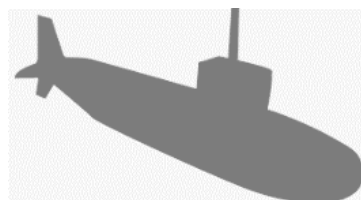
I am in a building on floor  $-4$ . Do I need to go up or down the stairs to get to  $-2$ ?



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

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

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

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

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

2) Delete a word to make each sentence correct

$-3\text{ }^{\circ}\text{C}$  is warmer / colder than  $-4\text{ }^{\circ}\text{C}$

$-3\text{ }^{\circ}\text{C}$  is warmer / colder than  $-1\text{ }^{\circ}\text{C}$

$-3\text{ }^{\circ}\text{C}$  is higher / lower than  $-4\text{ }^{\circ}\text{C}$

$-3\text{ }^{\circ}\text{C}$  is greater / less than  $-4\text{ }^{\circ}\text{C}$

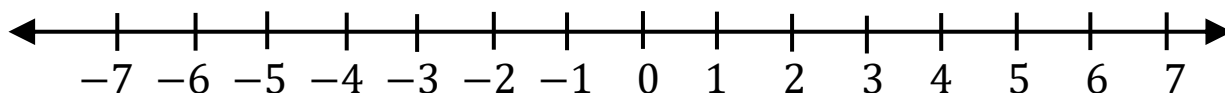
3) Write the numbers from smallest to largest. The number line can help.

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

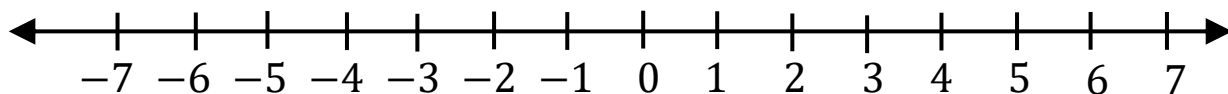


A positive number is greater than a negative number

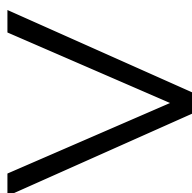
A positive number is equal to a negative number

A positive number is less than a negative number

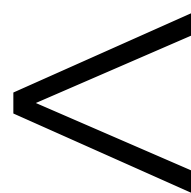
A negative number is greater than a negative number



-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.

$$-1 \bigcirc 2$$

$$-2 \bigcirc 2$$

$$-3 \bigcirc 2$$

$$-4 \bigcirc 2$$

$$1 \bigcirc -2$$

$$2 \bigcirc -2$$

$$3 \bigcirc -2$$

$$4 \bigcirc -2$$

A negative number is \_\_\_\_\_  
less than a positive number

A positive number is \_\_\_\_\_  
less than a negative number

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

$$2 \bigcirc 5$$

$$-2 \bigcirc -5$$

$$21 \bigcirc 19$$

$$-21 \bigcirc -19$$

$$3 \bigcirc 6$$

$$-3 \bigcirc -6$$

$$21 \bigcirc 20$$

$$-21 \bigcirc -20$$

$$4 \bigcirc 7$$

$$-4 \bigcirc -7$$

$$21 \bigcirc 21$$

$$-21 \bigcirc -21$$

$$24 \bigcirc 27$$

$$-24 \bigcirc -27$$

$$21 \bigcirc 22$$

$$-21 \bigcirc -22$$

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

