Home Learning: Mathematics

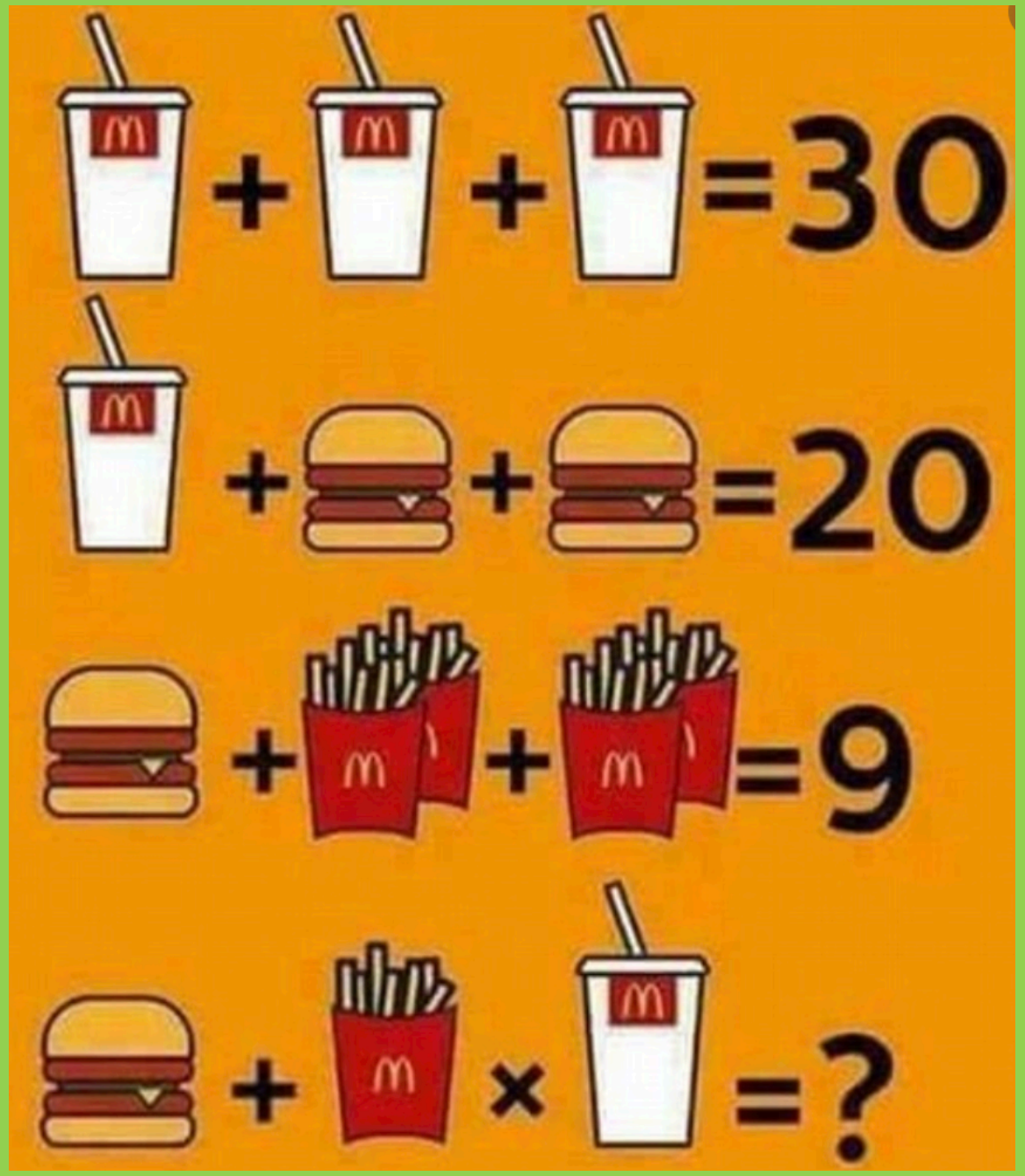
Summer 1: Week 2
Monday 27th April – Friday 1st May 2020

Once this lockdown is over, I know that one of the places that I'll visit is McDonald's – their cheeseburgers are just delicious!

However, can you work out the value of '?' (hint: pay careful attention to the objects)

The answer (and working out) will be revealed next week.

Good luck.

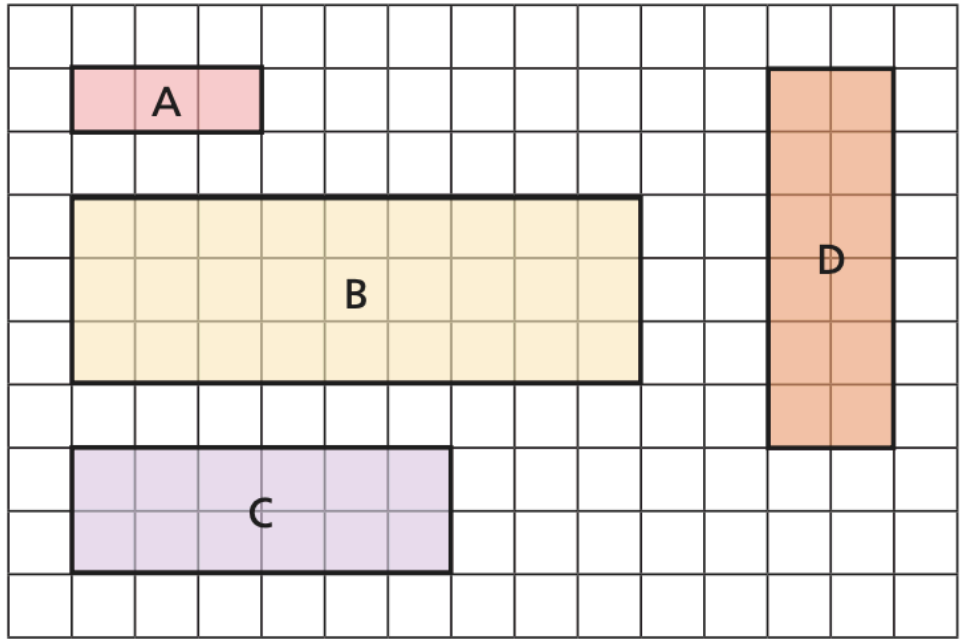


Monday 27th April 2020

Subject of Focus:

Scale Factors

1 Complete the sentences.



Work out the scale factor of the following shapes:

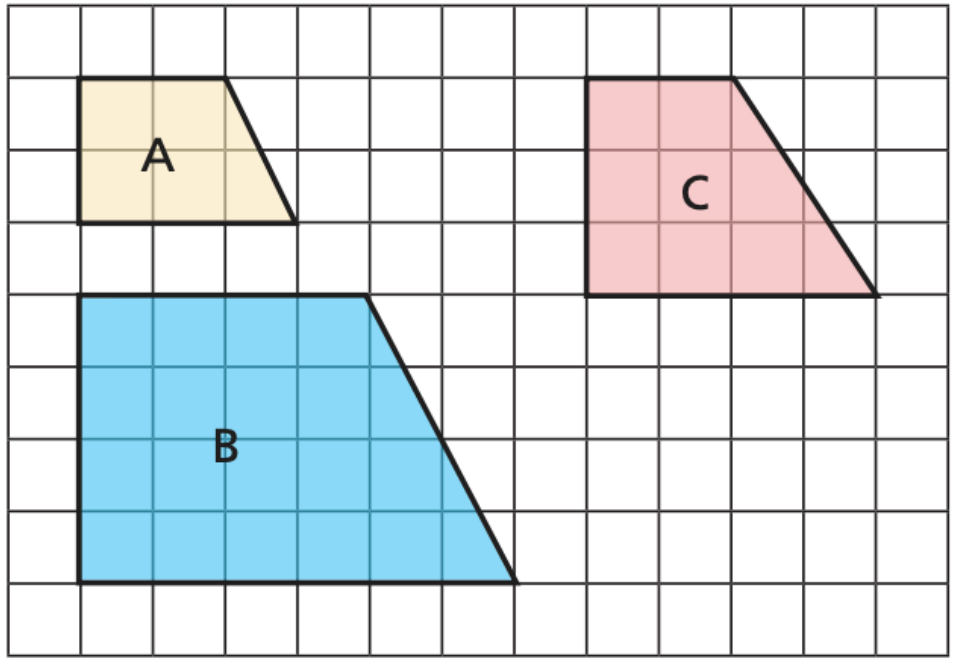
1. Shape C to A
2. Shape D to A

Example

Shape B has been enlarged by a scale factor of 3 from Shape A.

This is because its length and width has increased 3 times in size.

2 Shape B is an enlargement of shape A. Shape C is not an enlargement of shape A.



Question

Explain why Shape B is an enlargement of Shape A.
Remember to use the correct mathematical vocabulary.

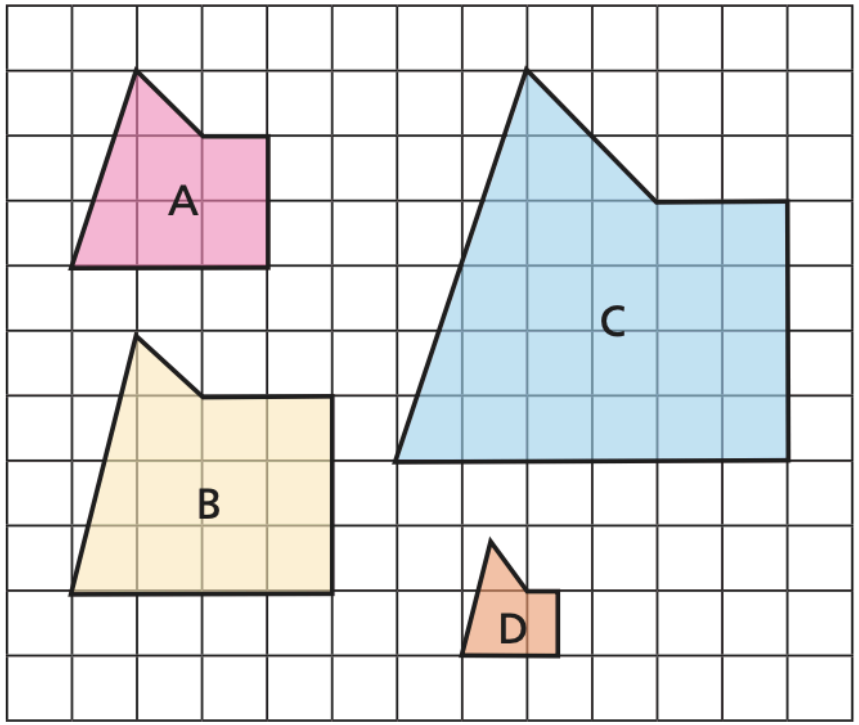
Question

Explain why Shape C is **NOT** an enlargement of Shape A.
(hint: have a look at shapes closely
Remember to use the correct mathematical vocabulary.

Extension

Shape A has been enlarged by a scale factor of 3.
Draw what the shape would look like.

3 Tick all the shapes that are an enlargement of shape A.



Question

Explain how you know that your choices were an enlargement of Shape A.

Question

Explain how you know that the shapes you did NOT choose were not an enlargement of Shape A

Extension

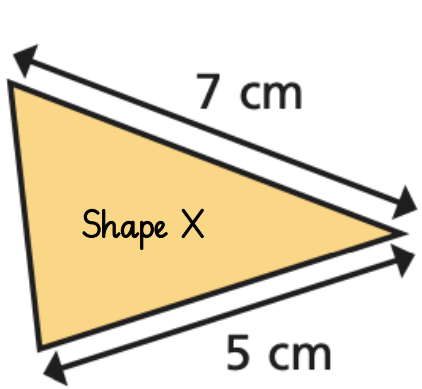
Draw a triangle that, when enlarged by a scale factor of 2, gives you Shape X

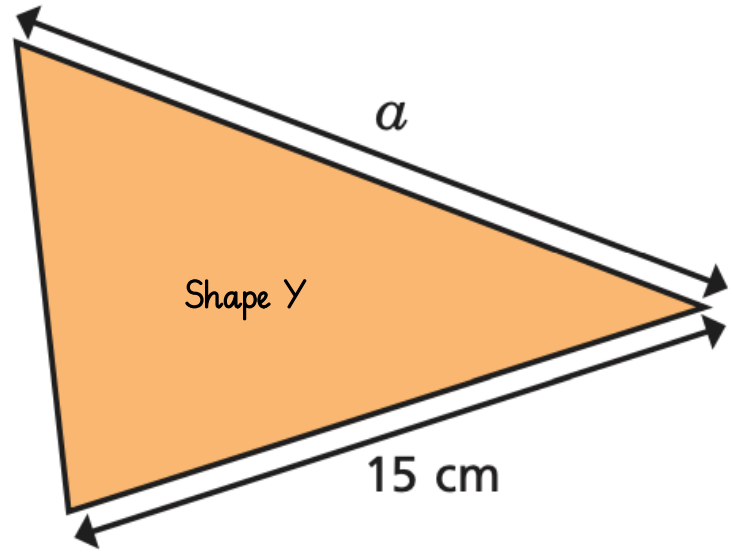
Extension

Draw a triangle that is an enlargement of scale factor 2 from Shape Y

4 The two triangles are similar.

Find the length of a.

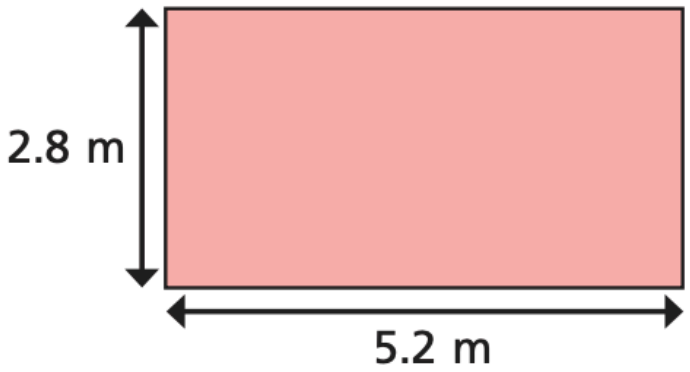




The rectangle is enlarged by a scale factor.

The perimeter of the enlarged rectangle is 64 m.

What is the scale factor of enlargement?



Remember to show your working out for this question.

Extension

Calculate the area of the rectangle above using the correct method.

Tuesday 28th April 2020

Subject of Focus:

Ratio & Proportion

1 Whitney buys 6 cans of lemonade for £3

Work out the following:

Q) How much would 3 cans cost?

Q) How much would 15 cans cost?

Q) How much would 1 can cost?

Example

Q) How much would 12 cans cost?

If **six cans** cost **£3,** another six cans will cost ANOTHER £3, therefore that totals £6.

2 The ratio of red to green grapes in a bowl is 3 : 1

a) Explain what this means.

Extension

Q) If I had seventeen bunches of green grapes, how many bunches of red grapes will I have?

Q) There are 12 more red grapes than green grapes.
What is the total number of grapes in the bowl?

3 Amir is making some chocolate chip biscuits.

He has this list of ingredients to make 6 biscuits.

Chocolate chip biscuits (makes 6)

120 g butter

72 g sugar

180 g plain flour

60 g chocolate chips

a) How much of each ingredient does Amir need to make 2 biscuits?

butter ☐ g plain flour ☐ g

sugar ☐ g chocolate chips ☐ g

b) How much of each ingredient does Amir need to make 10 biscuits?

butter ☐ g plain flour ☐ g

sugar ☐ g chocolate chips ☐ g

c) Amir has 240 g of chocolate chips.

What is the maximum number of biscuits he can make?

For each question, remember to show your working out.

4 Dexter has some 20p and 50p coins in a jar.

For every three 20p coins he has one 50p coin.

There are 12 coins in the jar in total.

How much money is in the jar?

5 A drink is made using 3 parts orange juice to 2 parts lemonade.

Esther makes 1.2 litres of this drink.

How much orange juice does she need?

4 Dexter has some 20p and 50p coins in a jar.

For every three 20p coins he has one 50p coin.

There are 12 coins in the jar in total.

How much money is in the jar?

5 A drink is made using 3 parts orange juice to 2 parts lemonade.

Esther makes 1.2 litres of this drink.

How much orange juice does she need?

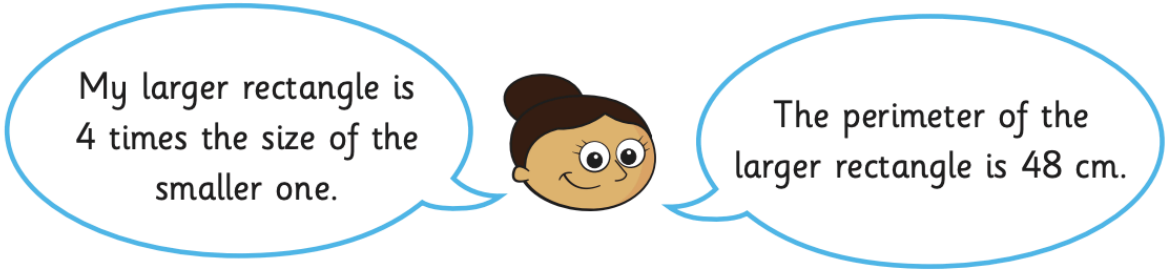
6 Two shops sell the same cereal but in different-sized boxes.

Shop A	Shop B
500 g of cornflakes	750 g of cornflakes
£2.10	£3.30

Which shop is better value for money? Shop _____

Explain why.

7 Dora draws two similar rectangles.



The length and width of both rectangles are even numbers.

What is the largest possible area for the small rectangle?

For each question, remember to show your working out.

Use pictures if you need to support/demonstrate your understanding.

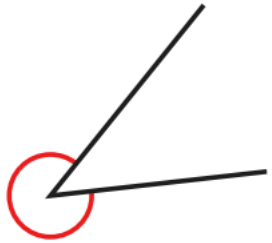
Wednesday 29th April 2020

Subject of Focus:

Measuring with a Protractor

1 Here are some angles.

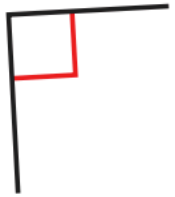
A



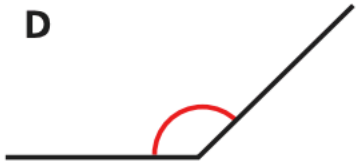
C

E

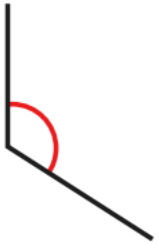
B



D



F



Acute angle	Obtuse angle	Right angle	Reflex angle

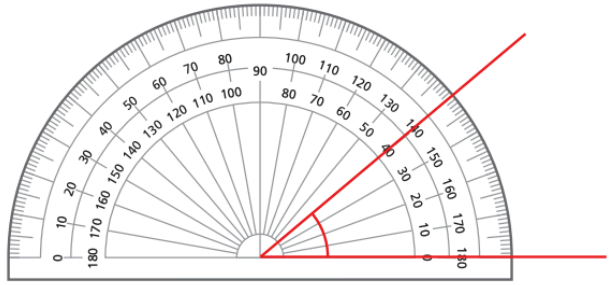
Question

Sort out the following angles in the appropriate boxes below.

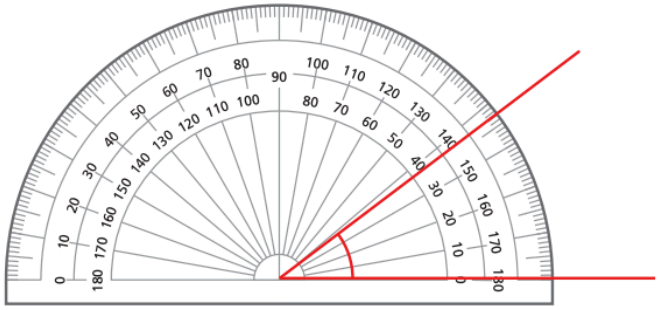
Question

What do each of these angles mean?
Write a definition for each one.

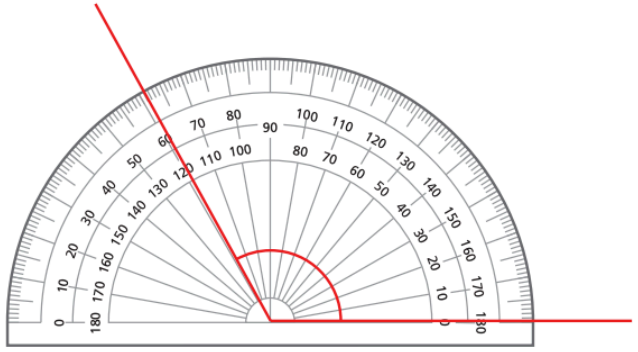
2 What is the size of each angle? Circle your answer.



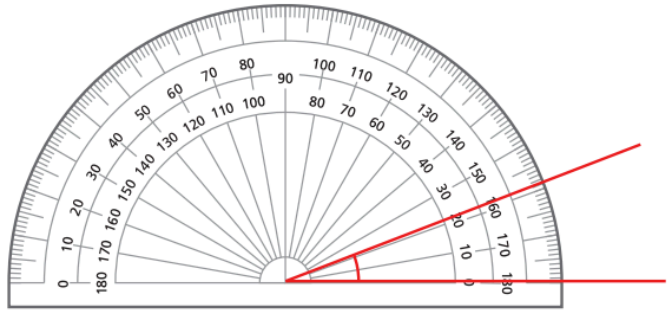
40° 140°



37° 143°



61° 119°

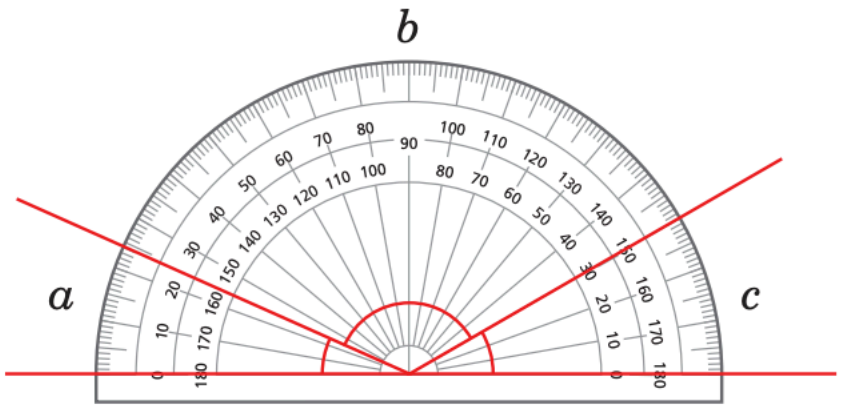


21° 159°

Extension

Why would someone read these measurements incorrectly? Explain your reasoning.

4 **a)** Work out the sizes of the angles.



$a =$ ☐

$b =$ ☐

$c =$ ☐

b) Discuss with a partner how you worked out each angle.

c) Find the total of your three angles. ☐

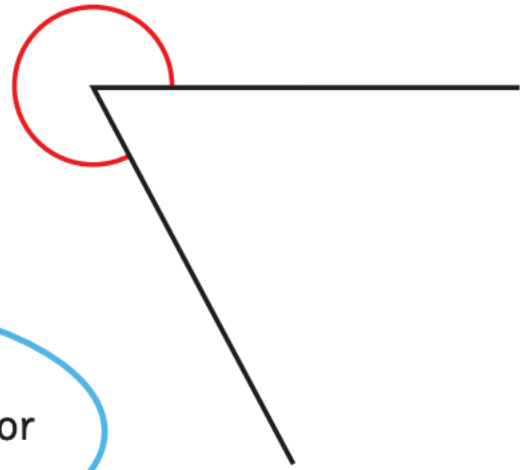
What do you notice?

_____

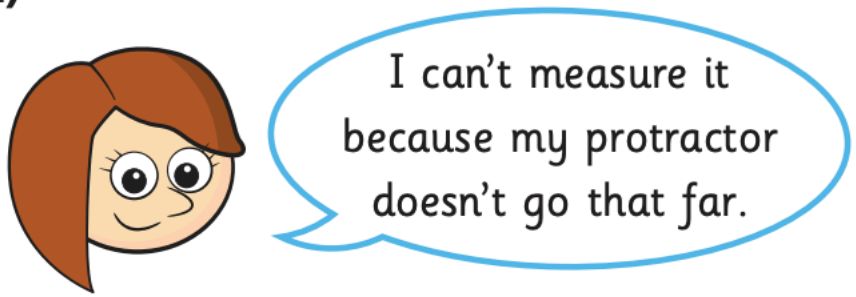
Extension

Give three different examples that total the specified amount.

5 Rosie is measuring the size of this angle.



a)



Do you agree with Rosie? _____

Explain your answer.

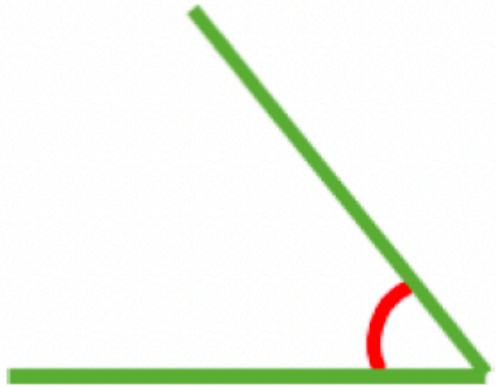
_____

_____

Extension

Do you think it is possible to measure any given angle? Explain your reasoning.

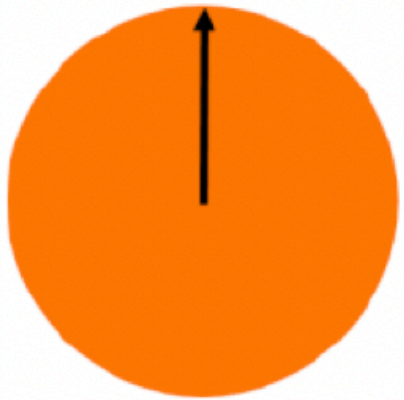
Sophie measures the angle below:

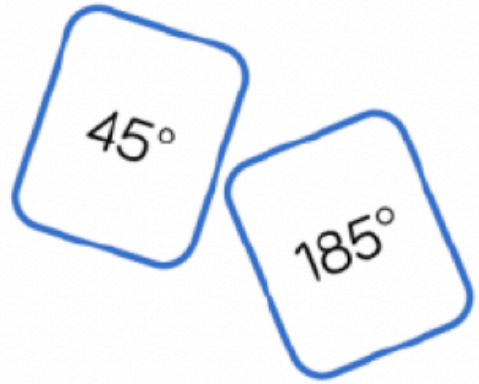


She says it is 130°.

Explain what mistake she may have made when measuring.

Cut out a circle and draw a line from the centre to the edge. Add a spinner in the centre of the circle.





Put the arrow in the starting position as shown above. Turn over a flash card with an angle on.

Estimate the given angle by moving the spinner. Explain, using your understanding, why you have estimated the angle to be that size.

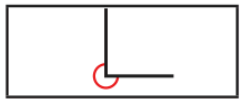
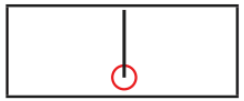
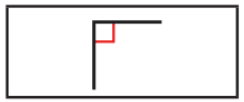
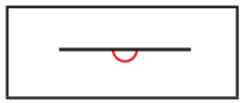
Check how close you were using a protractor.

Thursday 30th April 2020

Subject of Focus:

Introducing Angles

1 Match each angle to its picture and number of right angles.

90°		1 right angle
180°		4 right angles
270°		3 right angles
360°		2 right angles

2 Complete the sentences.

There is ☐ right angle in a quarter turn.

A quarter turn is ☐ degrees.

There are ☐ right angles in a half turn.

A half turn is ☐ degrees.

There are ☐ right angles in a three-quarter turn.

A three-quarter turn is ☐ degrees.

There are ☐ right angles in a full turn.

A full turn is ☐ degrees.

Extension

Using your answers, calculate the following:

- half a right angle
- a right angle and a half
- 2 and 1/4 right angles

3 **a)** Jack is facing the direction that the arrow is pointing.

Jack →

He turns a half turn.

Draw on the diagram to show the direction he is now facing and the angle he turned through.

How many degrees did he turn through? ☐

b) Dora is facing the direction that the arrow is pointing.

← Dora

She turns a quarter turn clockwise.

Draw on the diagram to show the direction she is now facing and the angle she turned through.

How many degrees did she turn through? ☐

c) Teddy is facing the direction that the arrow is pointing.

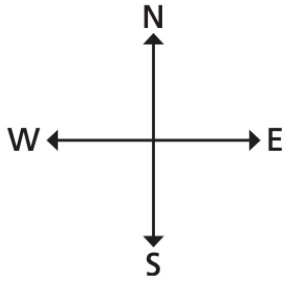
Teddy

He turns a three-quarter turn.

Draw on the diagram to show the two directions he could now be facing and the angles he could have turned through.

How many degrees did Teddy turn through? ☐

4 Here is a compass.



a) Huan is facing north.

He turns half a turn.

What direction is he facing now? _____

b) Whitney is facing east.

She turns 180°.

What direction is she facing now? _____

c) Alex is facing west.

She turns a quarter turn clockwise.

What direction is she facing now? _____

d) Amir is facing west.

He turns 90° anticlockwise.

What direction is he facing now? _____

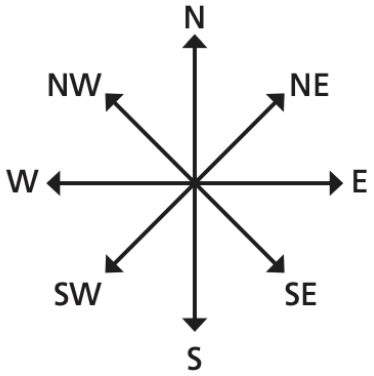
e) Kim is facing south.

What angle does she need to turn through to face east?

_____

Is there more than one answer?

5 Here is another compass.



a) Dexter is facing north-east.

He turns half a turn.

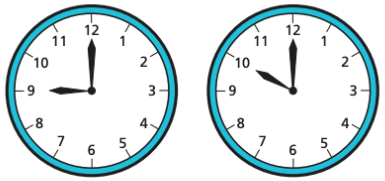
What direction is he facing now? _____

Remember to show your working out.

7

How many degrees did Eva turn through?

8 Nijah looks at the clock at the start and at the end of her maths lesson.



start **end**

How many degrees did the minute hand turn through during the lesson?

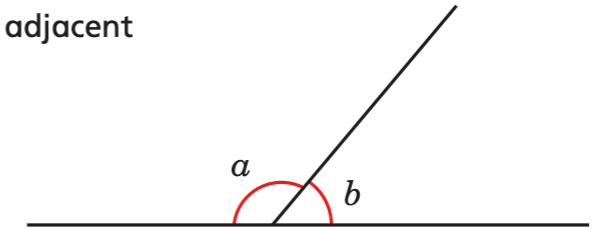
Remember to show your working out for each question.

Friday 1st May 2020

Subject of Focus:

Calculating Angles

1 Two angles, a and b, are adjacent on a straight line.



a) Measure angles a and b.

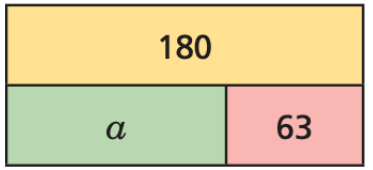
$a =$ ☐ $b =$ ☐

b) What is the total of the two angles? ☐

c) Complete the sentence.

Adjacent angles on a straight line _____

2 **a)** Complete the fact family for the bar model.



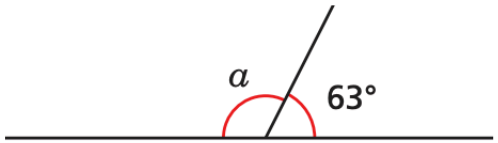
$a + 63 =$ ☐ $180 -$ ☐ $= a$

$63 +$ ☐ $=$ ☐ $180 - a =$ ☐

b) Tick the calculation in part a) that helps you work out the value of a.

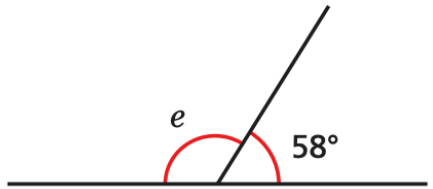
c) Work out the value of a. $a =$ ☐

d) How does the bar model help you to calculate angle a?



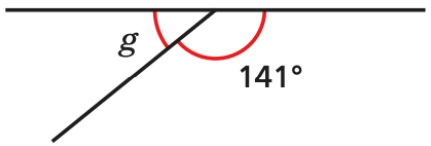
3 Work out the unknown angles.

a)



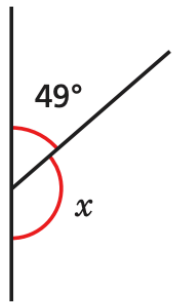
$e =$ ☐

b)



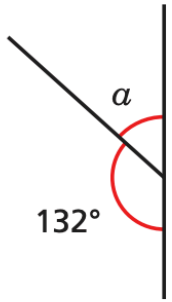
$g =$ ☐

c)



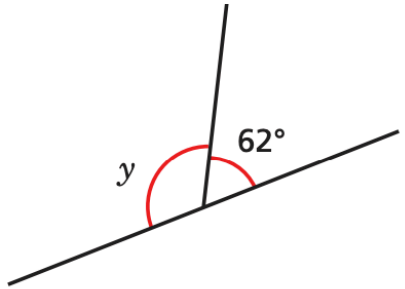
$x =$ ☐

d)



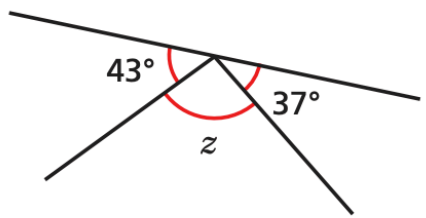
$a =$ ☐

e)



$y =$ ☐

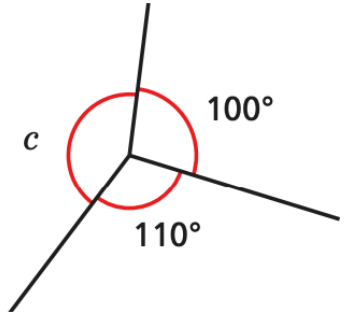
f)



$z =$ ☐

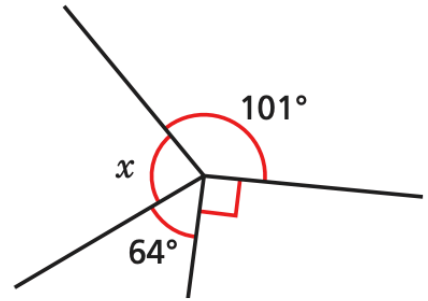
5 Work out the unknown angles.

a)



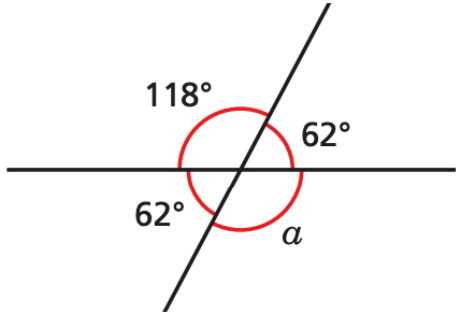
$c =$ ☐

b)



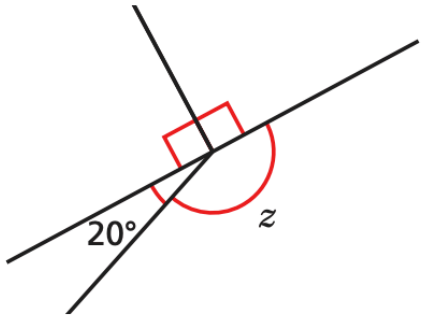
$x =$ ☐

c)



$a =$ ☐

d)



$z =$ ☐

4 Dora is facing in the direction shown by the arrow.

She does a full turn clockwise.

Dora

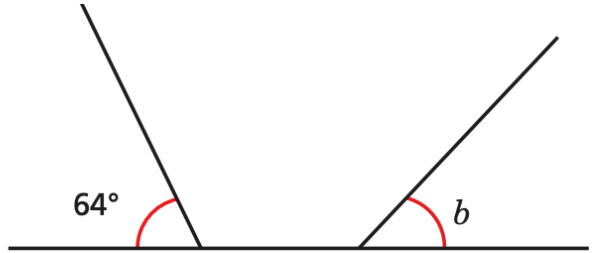
a) Show Dora's turn on the diagram.

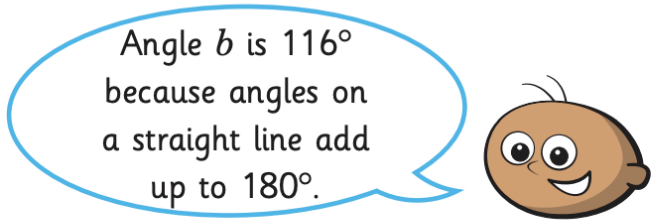
b) How many degrees did Dora turn through?

c) Use your answer to part b) to help you complete the sentence.

Angles around a point _____

6





Do you agree with Tommy? _____

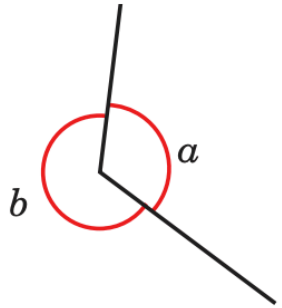
Explain your answer.

_____

_____

7 Use the information to work out the unknown angles.

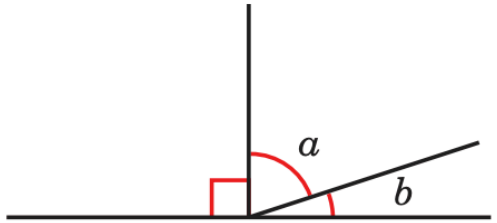
a) Angle a is half the size of angle b.



$a =$ ☐

$b =$ ☐

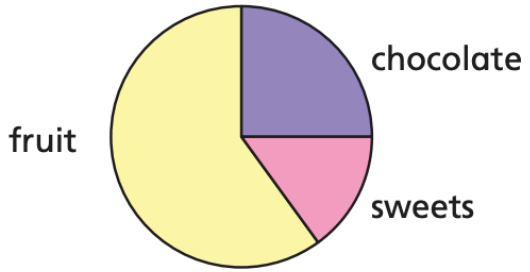
b) Angle a is four times the size of angle b.



$a =$ ☐

$b =$ ☐

8 The pie chart shows some children's favourite snacks.



A quarter of the children said chocolate was their favourite snack.

Five times as many children voted for fruit as voted for sweets.

Work out the size of the angle for each sector in the pie chart.

chocolate ☐ sweets ☐ fruit ☐