



Unit 9 Constructing triangles

Week 1 Lesson 1: Exploring circles

Choice of representation

Language + communication



Studentbook Answers

	2.	3.	4.	5.	6.	7.	D1.
3 cm	Accurate drawings	Accurate drawing	All are 4 cm so it is an equilateral triangle	4 cm	a) 8 cm	Accurate drawing	i. Accurate drawing
4 cm					b) 8 cm, 24 cm (any order)		ii. 1 cm, 2 cm, 4 cm, 8 cm
6 cm					c) 12 cm, 24 cm		iii. 512 cm / 5.12 m

Here students can practice using a pair of compasses by drawing circles with different diameters for each example and non-example.



I like to see if students assume the circles in each diagram share radius / diameter / circumference before prompting them that they do.

Key Learning

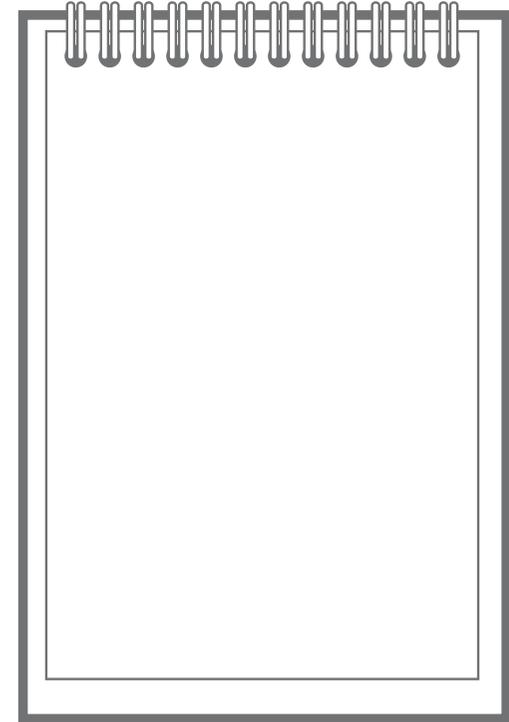
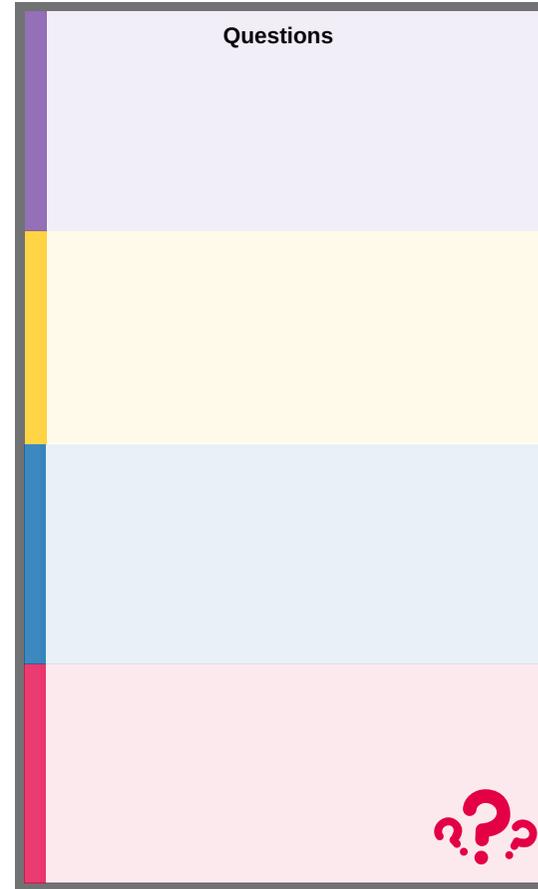
- Naming basic features of circles and reasoning using their properties
- Drawing circles using a pair of compasses

Prerequisites

- Know the key features of circles
- Understand the basic features of regular polygons



Questions



Approximate timings



Using isometric dotted paper for the second two diagrams can help act as a guide for students.



Using cm square dotted or lined paper can help students place the centres of the circles, and also reason each diameter.

Do Now Exploring circles **Tuesday, 26 November 2019**

"With one straight cut I can chop a circle into at most two pieces."

What is the maximum number of pieces you can chop a circle in to with:

A 2 straight cuts? **B** 3 straight cuts? **C** 4 straight cuts?

New Learning Circle anatomy

Radius Diameter Circumference Arc

Generate some examples and non-examples for each of the above. Use a pair of compasses to draw the circles.

Diameter

Talk Task Reasoning with circles

Name the shaded polygon in each of the four images below. How many features can you describe? Explain your reasoning.

Develop Learning Compass constructions

Construct the images below. Start each of them by drawing a circle. Choose your own radius length.

Plenary Construction conundrum

Construct each image where the diameter of the largest circle is 24 cm. Mark on any lines of symmetry and state the order of rotational symmetry.

(Circles are placed in horizontal rows or vertical columns)

Exit ticket

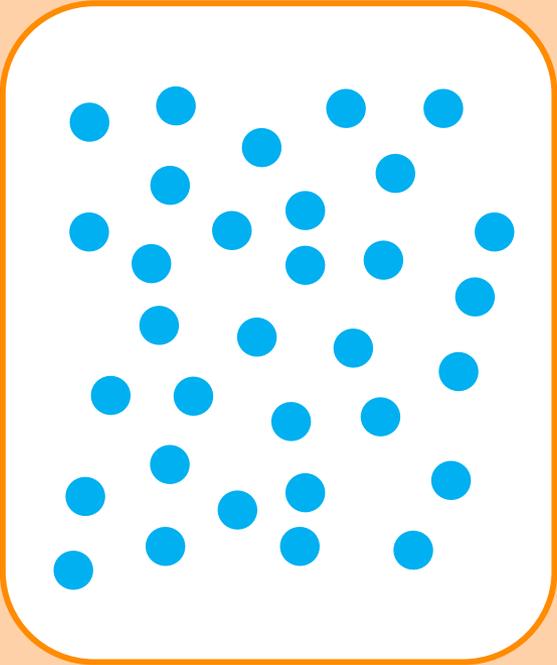
1. Use a pair of compasses to draw a circle with a diameter of 7 cm. Label the circle showing a radius, diameter and arc.
2. Two circles have the same radius. Explain why the triangle is **isosceles**:

(centers shown above)

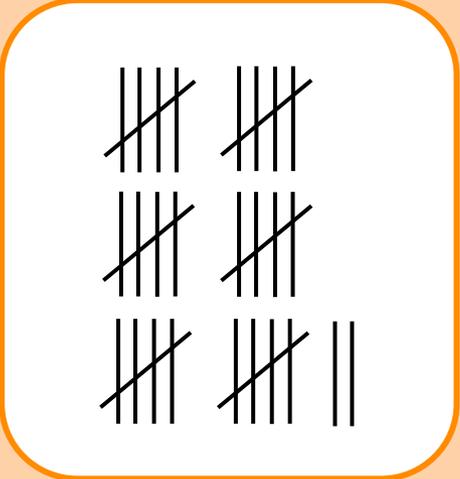
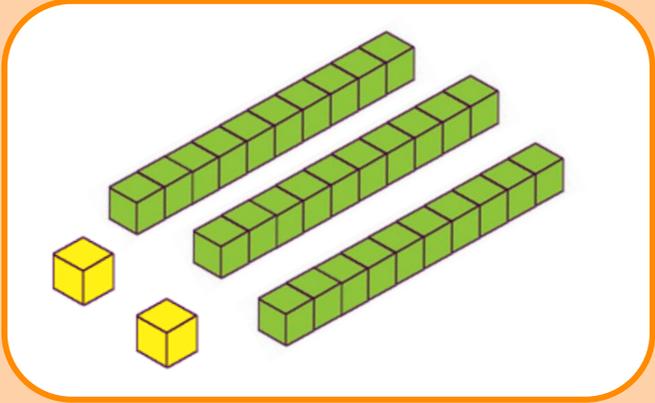


Representing number

Which of these representations would be the most helpful to explain this number to an alien? Why?



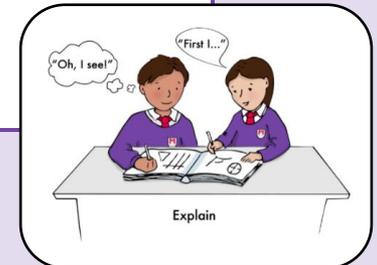
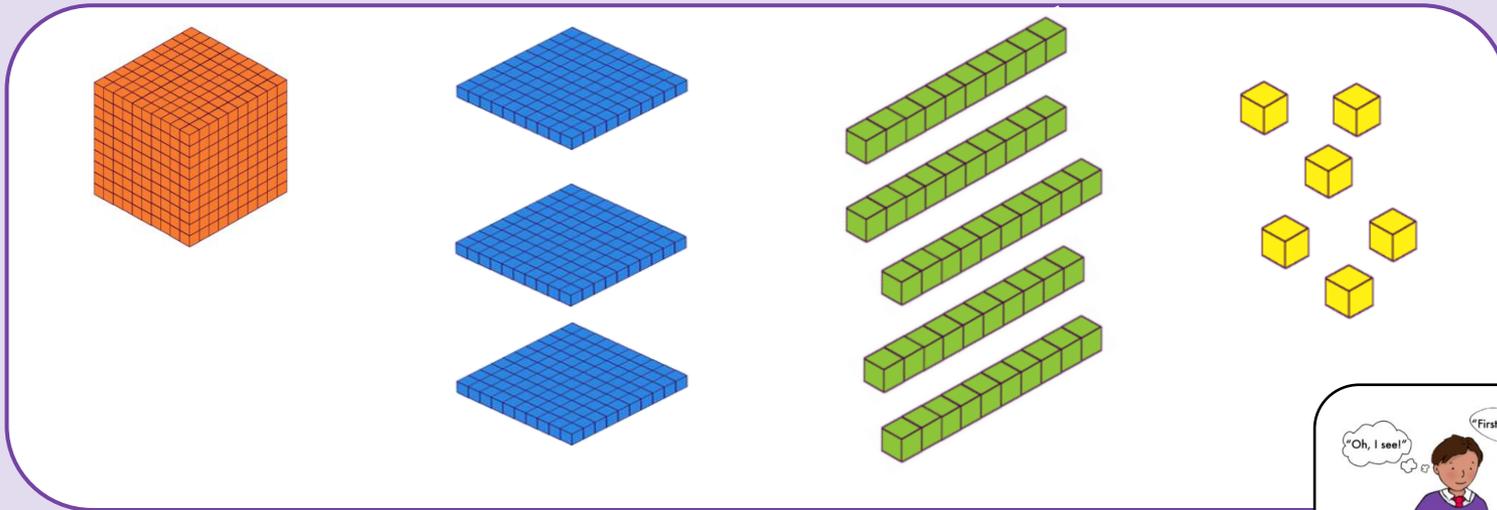
Tens	Ones
3	2





Why do we call our number system 'base 10'?

Thousands	Hundreds	Tens	Ones



What number is two hundreds, twenty two tens and twelve ones?



Ten lots of one hundred thousand **is equal to ...**

One hundred hundreds **is equal to**



How many different sentences about the base 10 number system can you form using the words below?



thousand

ten

one

billion

million

hundred

●	●	●	1 2 3
●	●	●	1 3 2
●	●	●	2 1 3
●	●	●	2 3 1
●	●	●	3 1 2
●	●	●	3 2 1



10 thousand = 100 hundreds

200 tens = 2 thousands

1000 thousands = 1 million

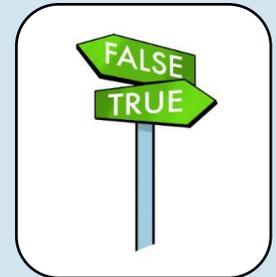
1000 hundreds = 10 ten thousands

300 tens + 10 hundreds = 4 thousands

1 million millions = 1 billion

800 tens = 8 ten thousands

30 ten thousands = 3 million



Put these in ascending order:

204 tens

2004 ones

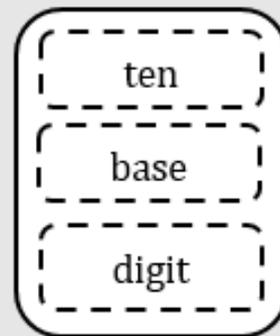
2 thousands + 40 ones

24 hundreds



Concept Corner

The number system we use most is _____ ten. This means each column has value _____ time greater than the column to its right. The position of each _____ in a number tells you about its value.



Thousands	Hundreds	Tens	Ones
4	7	3	2

The number above in words is

Write the number two thousand and ninety-six in the empty row.





Form each number by placing the cards into the place value grid.

Thousands	Hundreds	Tens	Ones
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

3184

4

3

8

1

3127

7

12

3

2904

4

10

8

2

4444

4

14

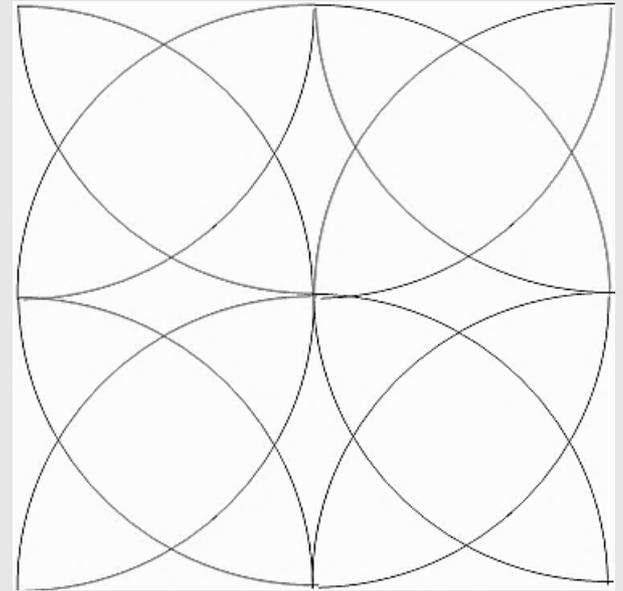
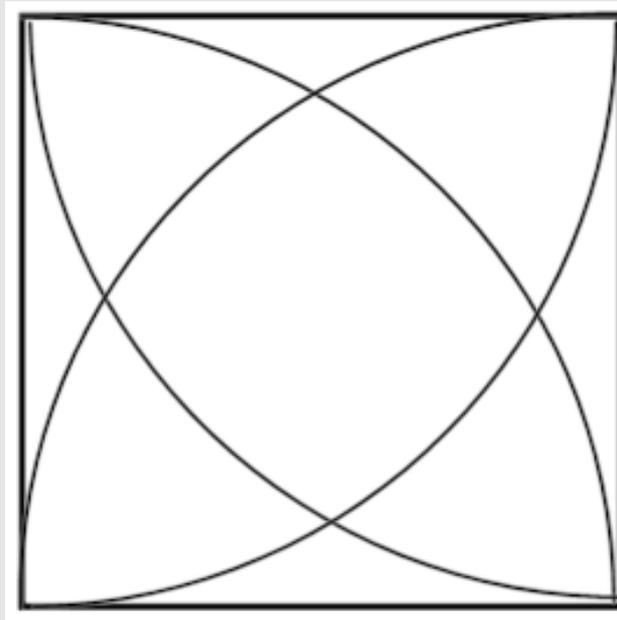
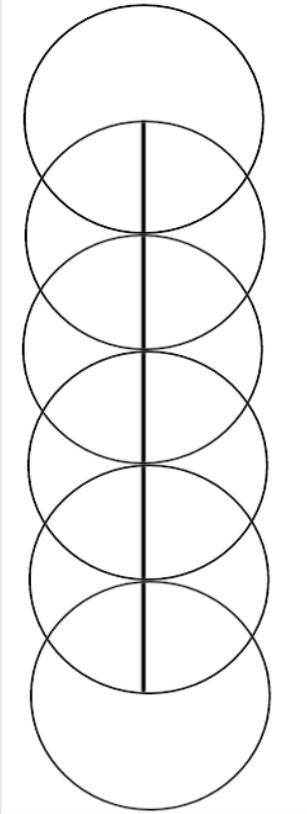
3

13

Create **three different** sets of cards that could be used to form 5005.

Patterns for a pair of compasses

Using just a pair of compasses, a ruler and a pencil, recreate any of the designs below.

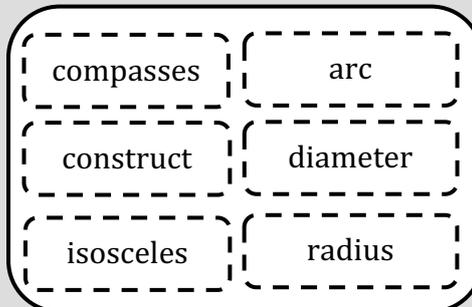
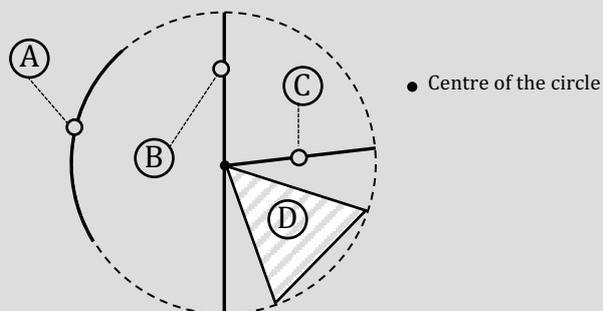


What other patterns can you create? How many lines of symmetry do they have?

Unit 9: Constructing triangles and quadrilaterals

Week 1 Lesson 1: Exploring circles

Concept Corner



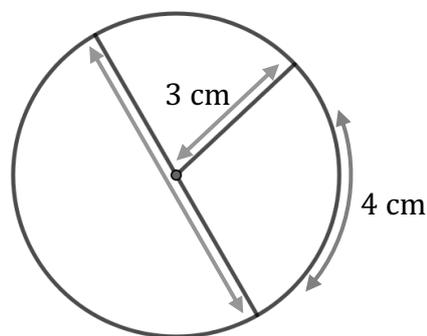
You can _____ a circle using a pair of _____. In the diagram above, different parts of the circle have been labelled:

A: _____ B: _____ C: _____

We can use circle properties to deduce related facts. For example, the triangle marked 'D' above is _____ because two sides are the length of the radius.

1. Copy and complete the following:

- The length of the radius is _____
- The length of the marked arc is _____
- The length of the diameter is _____



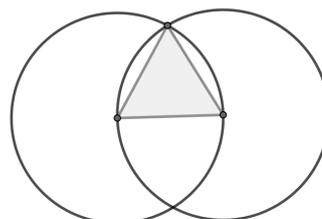
2. Use a pair of compasses to draw a circle that:

- has a radius of length 3 cm.
- has a diameter of length 10 cm.



3. Use a pair of compasses to construct the following. The two circles have a radius of length 4 cm.

[The centres of each circle and an intersection point are marked on. Not drawn accurately]



4. What are the three side lengths of the shaded triangle in question 3? What type of triangle is it?