

At home materials Guidance Pack Year 3 Weeks 8-9

Week 8

Pack 1: Lines, length and perimeter

Session A) Estimating length

Session B) Parallel and perpendicular

Session C) Perimeter

Session D) Exploring perimeter



Week 9

Pack 2: Time

Session A) Measuring time

Session B) Time across a day

Session C) Hour hand

Session D) Minute hand



Timing

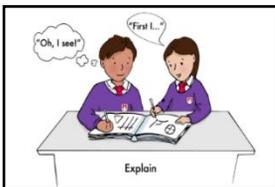
Each session is 30 minutes
20 minute Talk Task and 10 minute independent activity

Session guidance

Get **them** talking and grow their language.

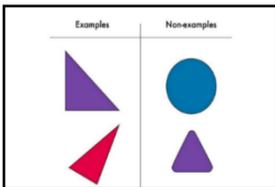
Get **them** to use equipment, manipulatives, models and images to show and explain.

Challenge them to think mathematically. Use the ‘Prompts for Thinking’ listed below to help them build habits in the way they think about mathematical situations.



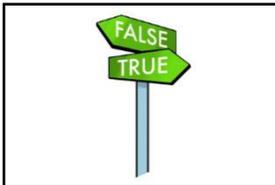
Reason it

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



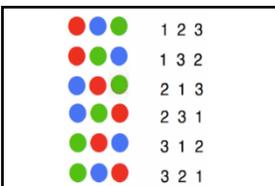
Generate examples and non-examples

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



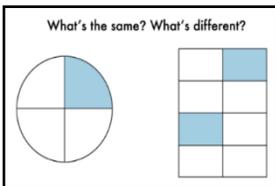
True or false?

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?

Pack 1: Length, lines and perimeter

Session A: Estimating length

Resources needed: String, ruler, measuring equipment e.g. measuring tape

The purpose of this session is to spend time developing a sense of length and increasing accuracy when estimating and using a variety of measuring tools.

Talk Task

Measuring is all about making comparisons. You use a tool, such as a ruler, to compare an object to the units marked on the scale. Before focusing on reading scales and using centimetres and metres, explore measurement language using non-standard units such as body parts. How many of your hands would be the same length as this table? Think of something that is the same length as your arm. Think of something that is shorter/taller/about the same height as you.

Focus in on standard units of measure by asking learners what they know about centimetres and metres. Ask them to estimate some lengths by using their hands or fingers. How long is 1 cm, 10 cm, 30 cm, 1 m? Use a ruler to check their measurements and allow them to adjust and feel the length before trying another length in order to increase accuracy.

Use the image of the pencil and pen to discuss how to use a ruler. The way they are lined up against the ruler prompts discussion of using zero and you should draw attention to the fact that zero is usually not right at the end of the ruler. Notice that you can still work out their lengths by reading the scale and calculating the difference. Imagine sliding the pen and pencil so they line up with zero and check that your calculations make sense.

Use your surroundings to estimate and measure a range of objects with a variety of measuring tools. Pay attention to how accurate learners are being, encouraging them to describe to you what they are doing. Work with metres, centimetres and millimetres extending into further sessions as needed.

Return to the Talk Task sheet and estimate the length of the two curved lines. Place a piece of string along the line and then measure the string to see how accurate you were. Discuss when it can be easier or harder to estimate length.

Activity

The activity sheet provides lines to measure. The first three are deliberately positioned to cross the width of five squares on the grid even though they are not all 5 cm long. Space is provided for learners to draw lines approximately 5 cm long and then measure them to check accuracy.

[Video guidance](#)



Pack 1: Lines, length and perimeter

Session B: Parallel and perpendicular

Resources needed: Pencils or sticks

The purpose of this session is to develop understanding of parallel and perpendicular lines.

Talk Task

Connect to the previous session by thinking about how to compare the lengths of two pencils. Asking learners to do this will probably result in them lining the pencils up next to each other. They will make the pencils parallel to decide which is longer. Take this opportunity to point this out and talk about the word parallel.

The sets of line segments at the top of the sheet are all the same length and yet the way they are arranged can make it seem as if they aren't. Ask learners to convince themselves that they are all the same length and to talk about what they notice. With the first pair, it can seem like the vertical line is longer. Discuss if you see this and play around with arranging pencils to see if their position changes the way you perceive their lengths.

The first pair of lines are perpendicular: they meet at a right angle. Ask learners if they know this word then find and create examples and non-examples of perpendicular lines making connections with understanding of right angles.

Return to thinking about parallel lines and imagine that a pencil is part of a line that continues forever in either direction. Ask learners to rotate the pencil and describe some objects that the line hits. Use a second pencil to imagine two lines continuing forever in either direction. Move the pencils and talk about when and where the lines would cross and when they would not. Attach the word parallel to situations where the lines do not cross.

Choose an example and a non-example to focus on what is the same and what is different. Use a third pencil to explore the distance between the pairs of lines. With parallel lines, you can show that the distance never changes. Continue the discussion using the grids on the sheet. Talk about why the first pair of lines are not parallel, use the second grid to draw other lines that are parallel (or not) and extend the line segments on the final grid to support reasoning.

Activity

The activity sheet provides space to write reasons for how learners know if pairs of lines are parallel. Encourage them to demonstrate what they have understood from the session. For the second question, ask learners to label what they draw using the words parallel and perpendicular.

[Video guidance](#)



Pack 1: Lines, length and perimeter

Session C: Perimeter

Resources needed: A ruler and string

The purpose of this session is to understand perimeter as a measure of length. It is the length of the boundary of a shape.

Talk Task

Area and perimeter are often confused by learners because experiences can involve looking at both together. Perimeter is a measure of length whereas area is a measure of surface. In an attempt to ensure clarity on the differences, perimeter is deliberately placed within a pack on length and area is explored in later packs.

Discuss the shapes on the sheet, reviewing understanding of polygons as 2-D shapes with straight sides. Continue to work on measuring by asking learners to estimate the length of the boundary of each shape. Ask them to trace the length around the outside with their finger and decide how long this is. Write down your estimates and then work to accurately measure the perimeter.

Use a ruler to measure each straight side length and record. For any curved sides, use a piece of string and place it along the length before straightening and measuring against a ruler. Observe how learners are using the ruler and support them to decide if they use millimetres or centimetres and millimetres.

When adding together side lengths there are opportunities to discuss how to calculate and how to explain and show the steps of chosen strategies. Having measured the perimeter of different shapes, flip the activity and ask learners to use the string to mark out different shapes that have a perimeter of 20 cm. They can cut the string or tie a knot to make a loop of this length and then explore different ways of arranging it to create different shapes.

Having measured the perimeter of different shapes, flip the activity and ask learners to use the string to mark out different shapes that have a perimeter of 20 cm. They can cut the string or tie a knot to make a loop of this length and then explore different ways of arranging it to create different shapes.

Activity

The activity sheet provides further practice with estimating and measuring perimeter.

Then learners sketch shapes with a given perimeter.

Encourage them to use a ruler and a piece of string to tackle this challenge.

[Video guidance](#)



Pack 1: Lines, length and perimeter	
Session D: Exploring perimeter	
Resources needed: Scissors	
The purpose of this session is to explore perimeter, giving lots of opportunity to find perimeter and calculate as well as notice interesting properties and investigate further.	
Talk Task Each of the small rectangles on the sheet measures 2 cm by 3 cm. Nine of them have been arranged in a rectangle. Explain this to learners and ask them to tell you about the lengths of the sides of this larger rectangle. Ask them to calculate the perimeter. Cut out one of the sets of individual rectangles. Explore making different rectangles by arranging the smaller rectangles in different ways. Learners may wish to use all or some of the rectangles to complete this. Discuss the different perimeters that are created and record some of these. Encourage learners to use their knowledge and understanding to find the perimeter e.g. 'one side is the length of three short sides of the small rectangles. Three groups of two is equal to six. The side is six centimetres.' Take time to explore what is the same and what is different about the perimeters. <i>What is the greatest and smallest perimeters that can be made using all of the small rectangles?</i>	
Activity The activity sheet provides a starting rectangle and guides learners through a similar experience, including increasing and decreasing side lengths. Learners should be encouraged to spot patterns as opposed to working out each individual perimeter. The second part encourages pupils to explore the perimeter of other shapes through creating an 'odd one out' task.	Video guidance 



Pack 2: Time	
Session A: Measuring time	
Resources needed: Tools for measuring time: clocks, stopwatch, sand timer,...	
The purpose of this session is to find out how familiar learners are with different units of time and the tools used to measure time.	
<p>Talk Task</p> <p>Discuss the units of time shown on the sheet, talking about when each of these units might be used thinking of examples from life. Decide the order from smallest to largest and describing the relationships between different units. Some points to include:</p> <ul style="list-style-type: none"> • 60 seconds is a minute, 60 minutes is an hour, 24 hours is a day, 7 days is a week • A day is the amount of time it takes the earth to make one turn on its axis • A month is not a set number of days and can range from 28 to 31 days • A year is the amount of time it takes the earth to travel around the sun • There are 52 weeks in a year • 365 days in a year unless it is a leap year and 29th February is an extra day <p>Knowing where words come from can support with understanding. For example:</p> <ul style="list-style-type: none"> • 'Dec' means 10, 'cent' means 100, and 'mille' means 1000 in Latin • Fortnight is Old English for fourteen nights <p>Extend the discussion by talking about other units of time that they might experience in their lives. For example, the school year is not a full year. It is made up of three terms. <i>How long is half a term?</i> (5 to 8 weeks) <i>How long is half term?</i> (a week off school)</p> <p>Next think about ways that time is measured. Use the images to discuss what learners know about tools and devices (recent and historical) for measuring time. <i>Do they have a watch? Is a stopwatch the same as a clock? Have they heard of candle clocks or water clocks? Can they think about how water or a burning candle could be used to mark the passing of time?</i></p> <p>Think about other measuring tools they have used and think about what is the same and what is different between these. Highlight the scales you can see on the tools and discuss different units the tools use.</p>	
<p>Activity</p> <p>The activity sheet prompts learners to think about how units of time are used. They must select a suitable unit and then consider something that would be measured in a given unit. The true or false question challenges learners to compare units of time.</p>	<p>Video guidance</p> 



Pack 2 Session A
Activity: Measuring time

Answers

1) Which unit of measure would you use to describe each of the following

a) Age of an adult Years

b) Age of a baby Months

c) Length of a film Minutes

2) Choose something that you would measure with each of these units:

a) Hours

b) Weeks **Check answers
are suitable**

c) Seconds

3) Decide if each statement is true or false.

a) The half term break is longer than 4 days. ~~True~~ False

b) 15 days is shorter than a fortnight. True ~~False~~

c) The summer holidays are longer than 3 weeks ~~True~~ False

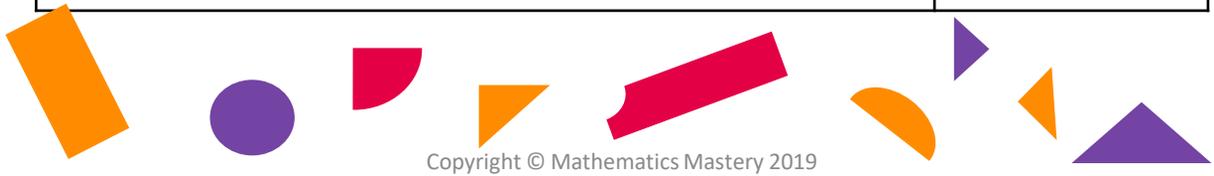
d) Half a year is shorter than a school term True ~~False~~

Write a true statement and a false statement:

Check answers are suitable



Pack 2: Time	
Session B: Time across a day	
Resources needed: Geared clock / online teaching clock https://mathsframe.co.uk/en/resources/resource/406/ITP-Clock	
The purpose of this session is to provide an experience of watching a clockface for a whole day and looking at how the hands move as time passes.	
Talk Task A geared clock is a useful tool because changing from one time to the next involves winding the hands through time rather than separately changing their positions. Use the visual description of a day in the life provided on the sheet to talk through the person's day. This a chance to explore the different ways to say the time as you talk through the events of the day. For example, they woke up at <i>six thirty</i> and travelled to work at <i>half past seven</i> . Use the clock alongside to start at midnight and wind the hands through time counting the hours. Pause at each event in the description of a day and notice the position of the hour hand and the minute hand. The details of how the clock works and how to read it will be the focus of later sessions and so most of the times chosen are on the hour or half past as these are easily recognised on a clock face. Encourage learners to watch the clock hands move and pay attention to how much more the minute hand moves compared to the hour hand. Thinking and talking about the length of time between events brings this into focus and strengthens understanding that 60 minutes is one hour. Give learners time to think about a day in their life and what events they would choose to record. Encourage them to use a clock and wind the hands through time, talking about events that happen on a 'normal' day. You may need to pick a particular day, e.g. yesterday. Discuss the similarities and differences with the example on the sheet. <i>Do they get up earlier or later? Do they eat lunch at a different time?</i> These conversations should lead into the activity and get them ready to record.	
Activity The activity sheet provides space for the learners to record the details of a day in their life. Provide a clock for them to wind as they think through and write down the time of each event. Encourage learners to sketch images of the clockface for each part of their day.	Video guidance 



Pack 2 Session B

Activity: Time across a day

Answers

Activities from across a day recorded with an arrow pointing to when they happen

Hours recorded on each marker from start of their day to end

The times should be made with a clock and these can be sketched on the sheet or the time written in words or numbers.

Pack 2: Time

Session C: Hour hand

Resources needed: Geared clock / online teaching clock

The purpose of this session is to highlight that a clock has two scales, the hours and the minutes, and to focus on reading the hour hand only.

Talk Task

Reading a clock face is complicated. There are two hands pointing to two different scales. This session identifies this and then focuses on the hour hand and reading the hour scale with the next session focusing on the minute hand.

Look at a clock and talk about what the numbers mean. Some clocks, including teaching clocks show the minutes as well as the hours. Highlight that the same position means different things depending on which hand is pointing to it.

Focus on the curved scales around the edge of the clockface by turning them into straight number lines. Stick a strip of paper around the outside of the clock and mark off the intervals. Take off the strip of paper and lay it flat to see that the scale around the outside of a clock can be thought in the same way as a number line or a ruler.

Repeat this to create two scales labelled with minutes and hours as shown on the sheet. Ask learners to think about how these scales fit together and to explain the third image on the sheet. 60 minutes is one hour and so the minute scale fits within each interval of the hour scale. As the hour hands moves one interval, the minute hand makes a full turn.

The fact that a clockface has two scales is one of the reasons it can be difficult to understand. Explain that we are going to think about each one in turn, starting with the hours. Ask learners if they think they would be able to read the time if only the hour hand was shown. Images are provided on the sheet to guide this discussion. Building on the previous session where they wound a geared clock through time, focus on the movement of the hour hand between each interval on the clock. By exploring lots examples, conclude that from the position of the hand, you can tell the time with some accuracy. This discussion should highlight the need for a minute hand in order to be more accurate in reading the time.

Activity

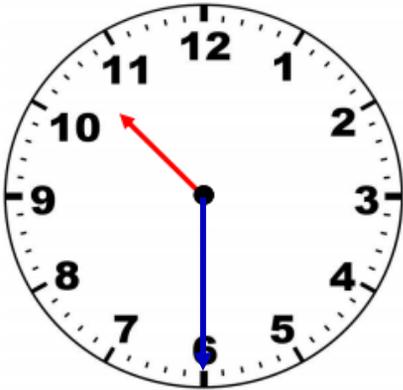
The activity sheet provides further tasks involving only the hour hand. Learners select the correct time shown by the hour hand and then draw the position of the hour hand for a given time. Extend the task by challenging them to draw on the minute hand as this will be the focus of the next session.

Video guidance



Activity: Hour hand

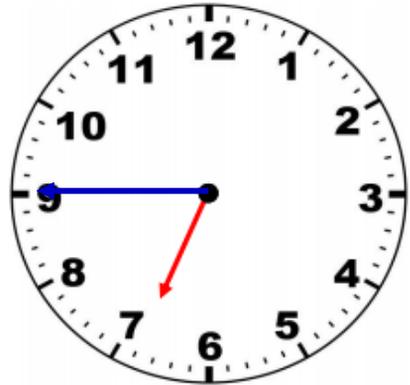
1) Select the correct time. Where would the minute hand be?



Quarter past 10

Half past 10

Quarter to 11



7 o'clock

Quarter past 7

Quarter to 7



Quarter past 1

Half past 1

Quarter to 2



2:10

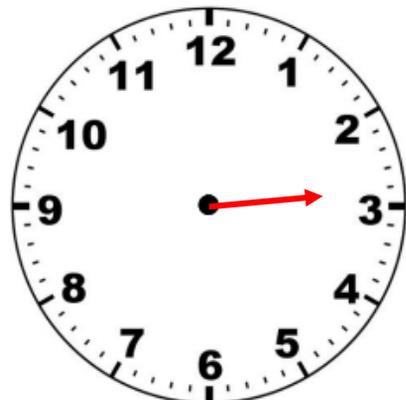
2:40

2:55

2) Choose where to draw the hour hand to show the given time.



Half past 8

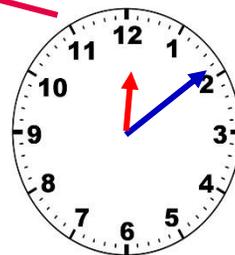
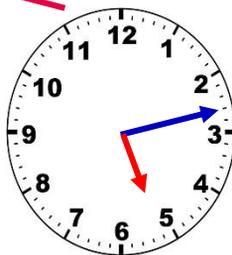
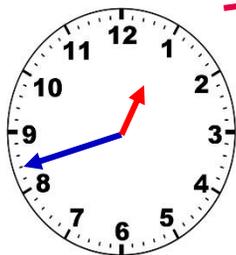
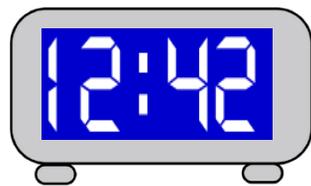
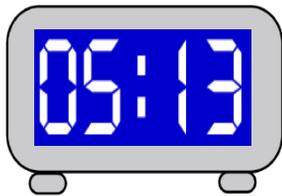


Ten to three

Pack 2: Time	
Session D: Minute hand	
Resources needed: Geared clock / online teaching clock	
The purpose of this session is to focus on the minute hand, exploring the language available to describe its position	
Talk Task Review the previous session that highlighted the two different scales on a clockface and that each hand gives different information. The hour hand was the focus of the previous session and now we shift attention to the minute hand. Use a clock to wind the minute hand through an hour and discuss the different language used to say the time. Write down some key words and phrases. A few clocks are shown on the sheet to prompt discussion. Talk about when we choose to say ' past the hour' and when we choose to say ' to the hour'. It is interesting to think about the fact that you can say both at any time. 'Ten past three' is also 'fifty to four' but we don't tend to say that. Explore other examples of saying the time both ways. Conclude that we say 'past' for time up to half past and after that we say how long to the next hour. Talk about the fraction language quarter and half and when we use them for time. We could also say 'a third past seven' when it is 7:20 or 'a third to nine' when it is 8:40 but we don't. Challenge learners to think of other examples and to play with the language. The minutes can also be read as just the number as this is often the way a digital clock display is read. The hour first then the number of minutes. Four fifteen. In the previous session the hour hand alone was used to tell the time. Discuss if it is possible to tell the time with only the minute hand. It is possible to tell something about the time, but not what hour of the day it is and so conclude that it is not possible. Use the clocks at the end of the sheet to get learners to explain why the minute hand is in the correct place to match the time shown on the digital clock and how they know. Challenge them to draw the hour hand onto each.	
Activity The activity sheet has digital clocks to be matched to clocks with only a minute hand. The hour hand can then be drawn in to show the time. Then the task is reversed so that the hour hand is provided and the minute hand needs to be drawn in to match times on a digital clocks.	Video guidance 



1) Match the clocks and draw in the hour hand.



2) Draw the minute hand in the correct position to show each time.

