Year 4 Homework Activities

Teacher Guidance

The *Inspire Maths* Home Activities provide opportunities for children to explore maths further outside the classroom. The engaging Home Activities help you to involve parents and carers in their child's mathematical learning. To support this, you might want to hold a short *Inspire Maths* meeting to fully explain what is expected.

Each Home Activity contains a practical activity to be completed using the activity sheets provided, or using common household items. A list of key words and phrases is given to support parents with modelling mathematical language for their children, and the activities also offer advice on specific strategies or misconceptions that parents could look out for.

Home Activities are only developed for units where home support is appropriate, so there may not be activities for all units. For those units without activities, you can refer to Home Maths sections in the *Inspire Maths* Pupil Textbooks for ideas for how a parent may support their child.

Parent/Carer Guidance

The *Inspire Maths* Home Activities give your child an opportunity to practise the maths that they have been doing at school, and give you an opportunity to support their learning.

Each Home Activity takes between ten and twenty minutes. The activities contain information on how the activity will help your child, important words and phrases that your child is learning, further opportunities to talk about your child's ideas, and particular strategies or issues to look out for. You are not expected to teach your child the mathematical concepts themselves.

You won't need any special equipment as most objects required for the activities can be found around the home. Some activities also include an activity sheet that contains illustrations or further questions to support your child's learning.

1 Making and comparing large numbers

This activity will help your child's understanding of place value and give vocabulary practice for numbers up to one hundred thousand.

Important words and phrases:

- digit
- number
- greater
- smaller
- ten, hundred, thousand

You will need:

- Activity sheet 1, cut into ten cards
- two players

What to do:

- Shuffle the cards from Activity sheet 1 and put them in a pile face down between two players.
- The first player takes a card from the pile and places it face up in front of them.
- The first player decides whether players are trying to make a number that is greater or smaller than their opponent's number. They say 'greater' or 'smaller'. This only happens on the first turn of each game.
- The second player takes a card and places it face up in front of them.
- Players take it in turns to take a card from the pile. They place each new card either at the beginning or at the end of the number they are building.
- For example, a player starts with 2. The next card that player gets is 1; they can choose to build the number 12 or 21. The player decides to build 21. On their next turn, the player gets 4. Now they can choose to put it at the beginning or the end of their number, so they can build 421 or 214 (but not 241 or 412, for example).
- Play continues until there are no more cards left. Depending on what the first player chose at the beginning of the game, the player who has built either the greater or smaller number scores a point.
- After a few games, discuss the strategy with your child:
    - *"Does it matter whether you choose greater or smaller at the beginning of the game? When does it matter? When does it not matter?"*
    - *"What do you think about when you build your number?"*
- You can play a version of the game where the winner of each round scores the difference between the two players' numbers. For example, if one player has 53210 and the other has 98764, the winner will score 45554.

Talk about:

- Use everyday opportunities to look for large numbers. You might see 5-digit numbers on the milometer in your car, on the news, or in the sales or property section of local newspapers. Ask your child to compare the numbers, or to add or subtract them.

Look out for:

- Take opportunities to discuss what happens when a zero is the first digit of a number. When 0 is the first digit of a number, it is a placeholder. Since there isn't another digit to the left of it, the 0 doesn't need to be counted. For example, 04521 = 4521.

Activity sheet 1

This activity sheet is for use with Y4 Home Activity 1

1	2
3	4
5	6
7	8
9	0

2 Rounding whole numbers

This activity will reinforce the concepts used in rounding, including in the context of distance to the nearest geographical feature.

Important words and phrases:

- nearest
- village
- town
- city
- capital city
- kilometres (km)

You will need:

- Activity sheet 2
- small counter or coin
- ruler

What to do:

- Talk about what Activity sheet 2 shows. It is a map showing a number of villages, towns and cities.
- Ask your child to close their eyes and put the counter somewhere on the activity sheet. Ask: *"Where is the nearest place that people live? Where is the nearest town? Where is the nearest city?"*
- Repeat this activity with a few more positions on the activity sheet. You may occasionally need to use a ruler to compare the distances.
- Think of some friends and family members who live in different places.
- Help your child to record where family members and friends live in a table like this:

Name	Nearest town	Nearest city	Nearest capital city
Karen	Hastings	Brighton	London

- Use a road map or the internet to find out how far in kilometres each person lives from each town or city. Sometimes, of course, it will be 0km!
- Next, ask your child to round each distance to the nearest 10km. When rounding to the nearest ten, remind your child to look at the last digit in the number to see which ten it is nearest to. Numbers ending in 0, 1, 2, 3 or 4 round down to the ten before the number, and numbers ending in 5, 6, 7, 8 or 9 round up to the ten after the number. For example, the number 23 is between 20 and 30 but the last digit is 3, so the number rounds down to 20.

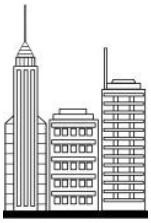
Talk about:

- Ask your child to compare large numbers that come up in conversation or on the news. Ask, for example: *"Which number is greater? What is each number rounded to the nearest ten? What about to the nearest hundred?"* Remind your child that when rounding to the nearest hundred, they need to look at the digit in the tens place in the number to see which hundred it is nearest to. The same strategy as rounding to tens can be used here: if the digit in the tens place is 0, 1, 2, 3 or 4, round down to the hundred before the number; if the digit is

5, 6, 7, 8 or 9, round up to the hundred after the number. For example, the number 446 rounds down to 400 as the digit in the tens place is 4, and the number 462 rounds up to 500 as the digit in the tens place is 6.

Activity sheet 2

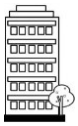
This activity sheet is for use with Y4 Home Activity 2



Hallerham

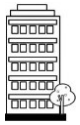
Lefton

Coldwell



Finton

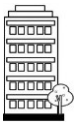
Cat Green



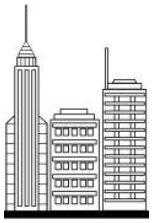
Porton

Poolmoor

Thatching

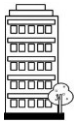


Minton



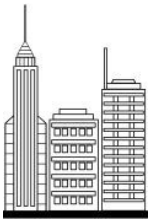
Jonesville

Parsing

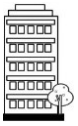


Cottering

Key:



City



Town

Village

Once Marple

3 Multiplying whole numbers

This activity will give your child practice adding and multiplying numbers in calculations with several steps, while solving a problem.

Important words and phrases:

- altogether
- each
- cost

You will need:

- Activity sheet 3

What to do:

- Talk to your child about any school trips they have been on, or perhaps school trips that are coming up.
- Read the introductory text on Activity sheet 3. Ask your child a few questions, for example: "*How many children are going on the trip? How many adults? How many people altogether?"*
- Help your child to work out how much the trip would cost if everyone did every activity.
- Explain that there is a maximum amount of money that can be spent. This amount is £500. What could the class do? Note that if everyone did every activity then the total cost would be £666.50.
- Discuss the choices your child makes. Some things are essential (the coach, lunch) and others are not.
- Suggest that everyone on the trip should do at least one activity. Your child might suggest the class splits to do different activities – you can discuss this.

Talk about:

- Discuss the cost of activities you do together, for example: *"How much is an adult ticket? How much is a child ticket? How much will it cost us all to take the bus?"*
- Your child could help you plan a family visit to a theme park or other local attraction.

Activity sheet 3

This activity sheet is for use with Y4 Home Activity 3

There are 28 children on the school trip. There are 2 teachers and 5 parent helpers.

The school has found out the cost of the things that they need for the school trip, and for things they would like to do.

Item	Cost
Coach	£180 for the day
Lunch	£2 for each child £3 for each adult
Morning coffee or tea	£1.50 for each adult
Entrance to the castle	£2.50 for each child Adults free
Ice cream as a treat	£1.20 for each person
Trip to Aqua Land	£4 for each child £7 for each adult
Trip to Adventure Quest	£4.50 for each child Adults free

4 Tables and line graphs

This activity will give your child practice in interpreting data, and relating tables to line graphs.

Important words and phrases:

- data
- table
- line graph
- temperature
- degrees Celsius (°C)
- weather
- time

You will need:

- Activity sheet 4

What to do:

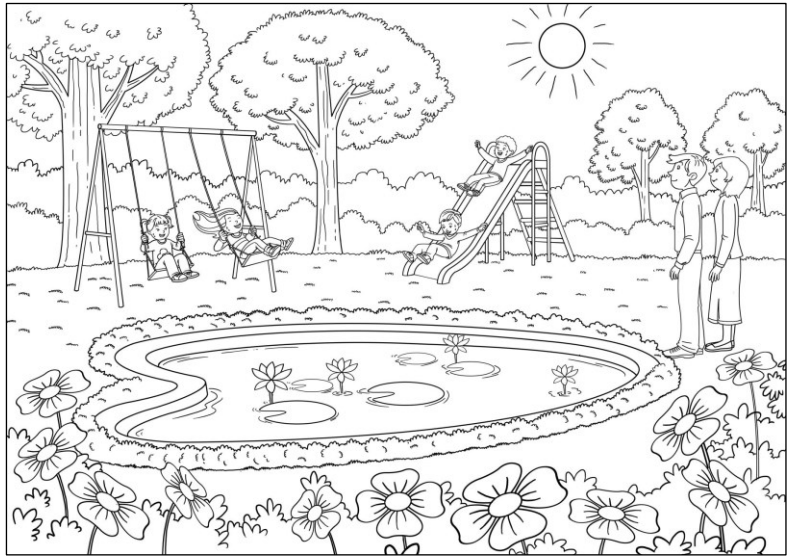
- Look at the four pictures on Activity sheet 4 with your child, and ask them to describe the scenes. Ask: *"What's different about the pictures? Which pictures look warm? Which look cold? What time of year do you think it is in each one?"*
- Now look at the tables and line graphs. Explain that the line graph shows the same set of data as the table on that page. Ask your child to use the data in the line graphs to fill in the missing data in the tables, and to use the data in the tables to draw the missing lines on the line graphs.
- Ask your child to describe the kind of day that each graph represents. Ask: "*Is it warm or cold? What is it like in the morning? Do you think this is a summer day?"*
- Now they should be ready to match each set of data with a picture. Ask them how they chose to make the match. They will need to look at the whole day, not just the time shown in the picture.

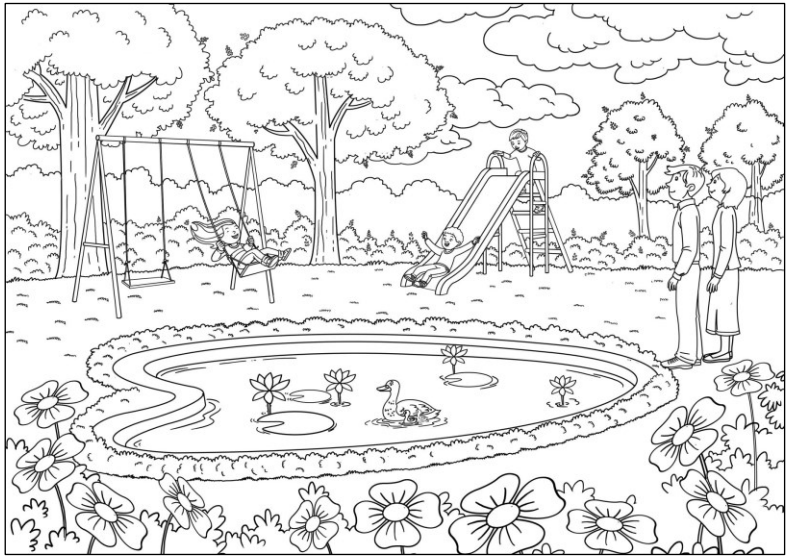
Talk about:

- Use a website, weather app or newspaper that shows the temperatures during the day where you live. Help your child to draw a line graph, like the ones on the activity sheet. Then discuss how the day would look. Children can draw a picture of the day's weather either using the scene on the activity sheet, one from their imagination, or one outside the window.

Activity sheet 4

This activity sheet is for use with Y4 Home Activity 4



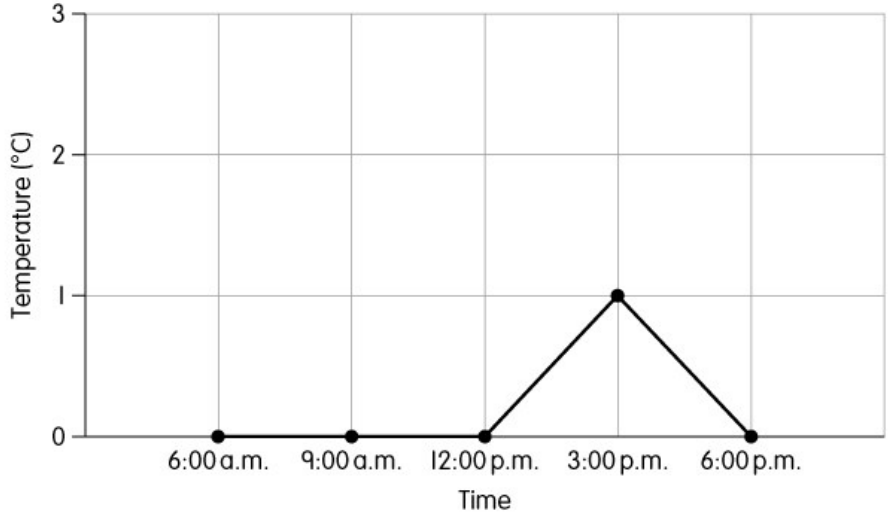


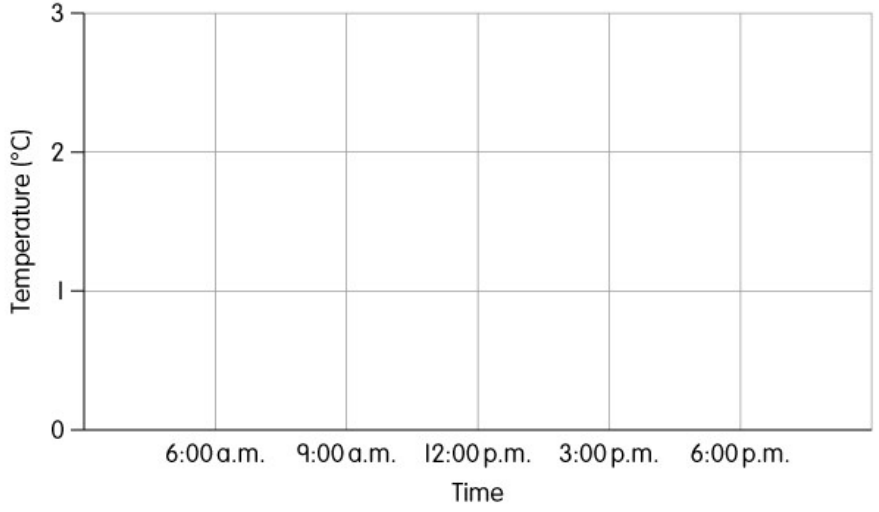
Time	6:00 a.m.	9:00 a.m.	12:00 p.m.	3:00 p.m.	6:00 p.m.
Temperature (°C)	18	23	27	26	24

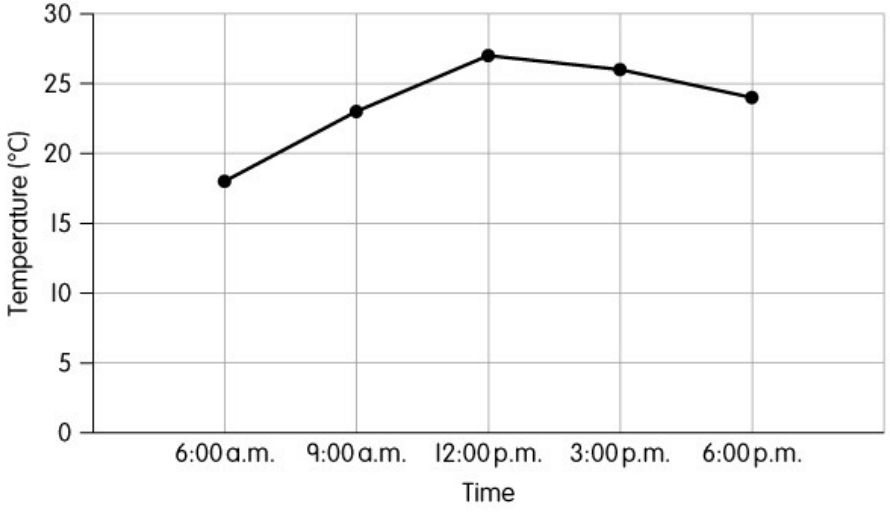
Time	6:00 a.m.	9:00 a.m.	12:00 p.m.	3:00 p.m.	6:00 p.m.
Temperature (°C)	0	2	2	3	1

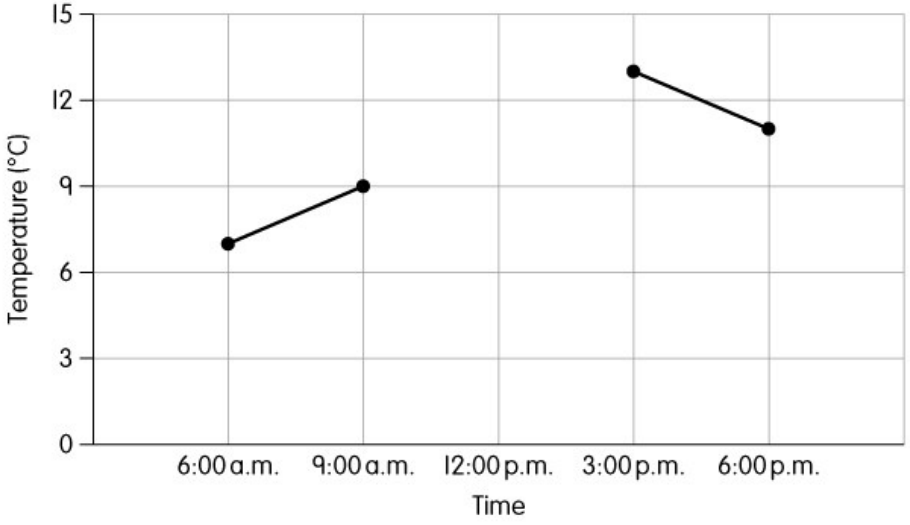
Time	6:00 a.m.	9:00 a.m.	12:00 p.m.	3:00 p.m.	6:00 p.m.
Temperature (°C)	0	0			0

Time	6:00 a.m.	9:00 a.m.	12:00 p.m.	3:00 p.m.	6:00 p.m.
Temperature (°C)		9	12	13	11









6 Angles and compass points

This activity will give your child practice in identifying angles, using compass points and following directions.

Important words and phrases:

- degrees
- clockwise, anti-clockwise
- north, south, east, west
- north-east, north-west, south-east, south-west

You will need:

- Activity sheet 5
- protractor
- angle measurer (optional)

What to do:

- Talk about how to recognise different sizes of angles such as 45˚, 90˚, 135˚, 180˚, 225˚, 270˚, 315˚ and 360˚.
- Ask your child to pretend to be a robot. Give them a list of instructions, one at a time, to guide them around your house. Say, for example: *"Turn 45˚ clockwise and walk forward four steps."* Switch places and let them control you in the same way, using angles and instructions.
- Look at Activity sheet 5 and discuss what it could be. It is a treasure map! Cut out each landmark and ask your child to stick the landmarks on to the squared paper to create the treasure map. You could also give each landmark a name on the map.
- The first player places the boat on the map, on a point where two of the lines meet. The second player chooses a landmark where the treasure is hidden, without telling the first player.
- The second player then gives instructions to navigate the boat to the treasure using angles and numbers of squares. Say, for example: *"Turn 135° clockwise and go forward 4 squares."*
- When the first player has found the treasure, swap roles.

Talk about

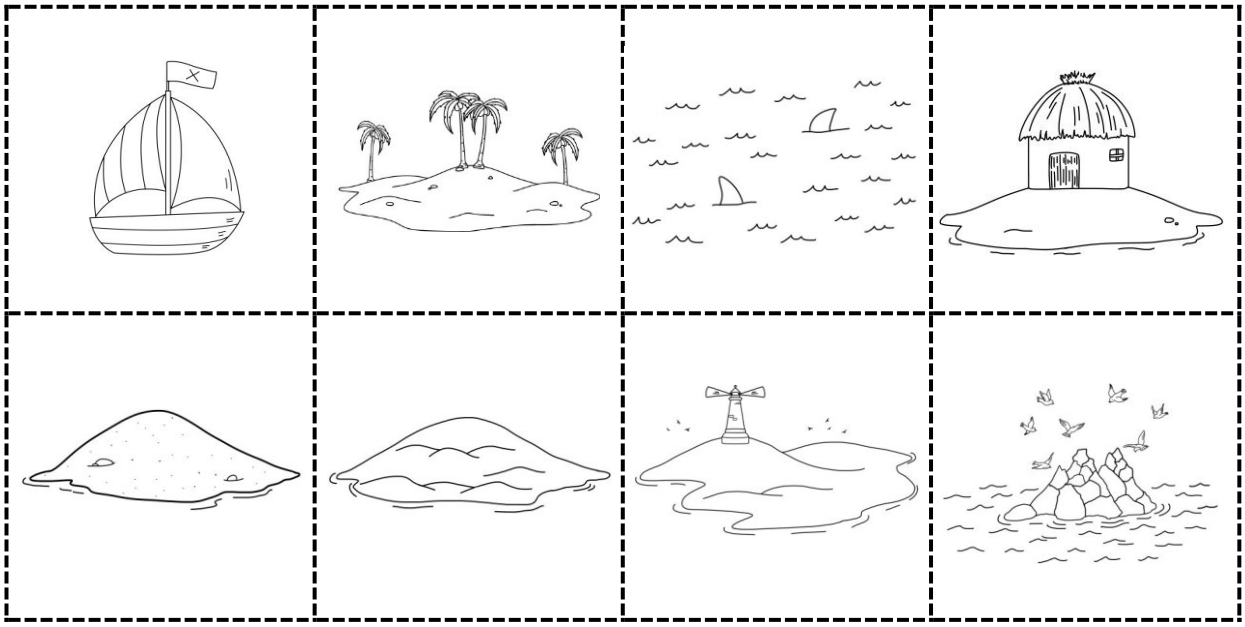
- You could also give instructions using compass points and number of squares. The arrow pointing up shows the direction of North.

Look out for:

- Your child should be familiar with right angles and so will recognise a right angle as 90˚, and they be able to derive other related angles from this. If your child is uncertain about right angles, try using a right angle measurer (a piece of paper folded in half and then in half again) to identify right angles on the map or around the home.

Activity sheet 5

This activity sheet is for use with Y4 Home Activity 6



7 Perpendicular and parallel dominoes

This activity will give your child lots of opportunity to recognise and discuss parallel and perpendicular lines.

Important words and phrases:

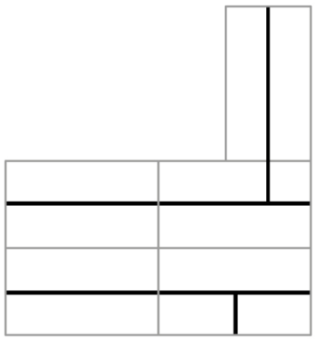
- parallel
- perpendicular

You will need:

- Activity sheet 6, cut into domino cards along the dotted lines

What to do:

- Each player starts with three dominoes. The rest are face down in a pile. One domino is placed face up to begin the game.
- Players take turns laying down dominoes using the following rules:
    - You can place a domino that continues a line on the dominoes already played, that makes a line parallel with a line on a domino already played, or one that makes a line perpendicular with a line on a domino already played.
    - You can't use your domino to cut off a line on a domino already on the table.
    - If a player cannot go, they take a domino from the face down pile until they find a domino they can use.
- The winner is the first person to use all their dominoes. If neither player can finish, the winner is the person with the fewest dominoes left.
- Discuss sets of parallel and perpendicular lines.



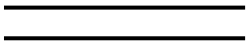
Example: this game position is allowed, because no lines are cut off by other dominoes, the domino in the top row is perpendicular to the domino underneath it, and the dominoes that touch without lines are parallel.

Talk about:

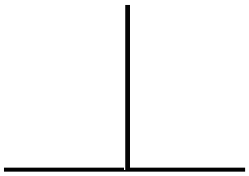
- Look for parallel and perpendicular lines in things around you, and ask your child about them. It is easy to see them in objects made by people, but ask your child about nature as well, for example: *"How do most plants grow? How does something fall when you drop it?"*

Look out for:

- Parallel lines are two lines that are the same distance apart no matter how long they are. Parallel lines can never cross each other:

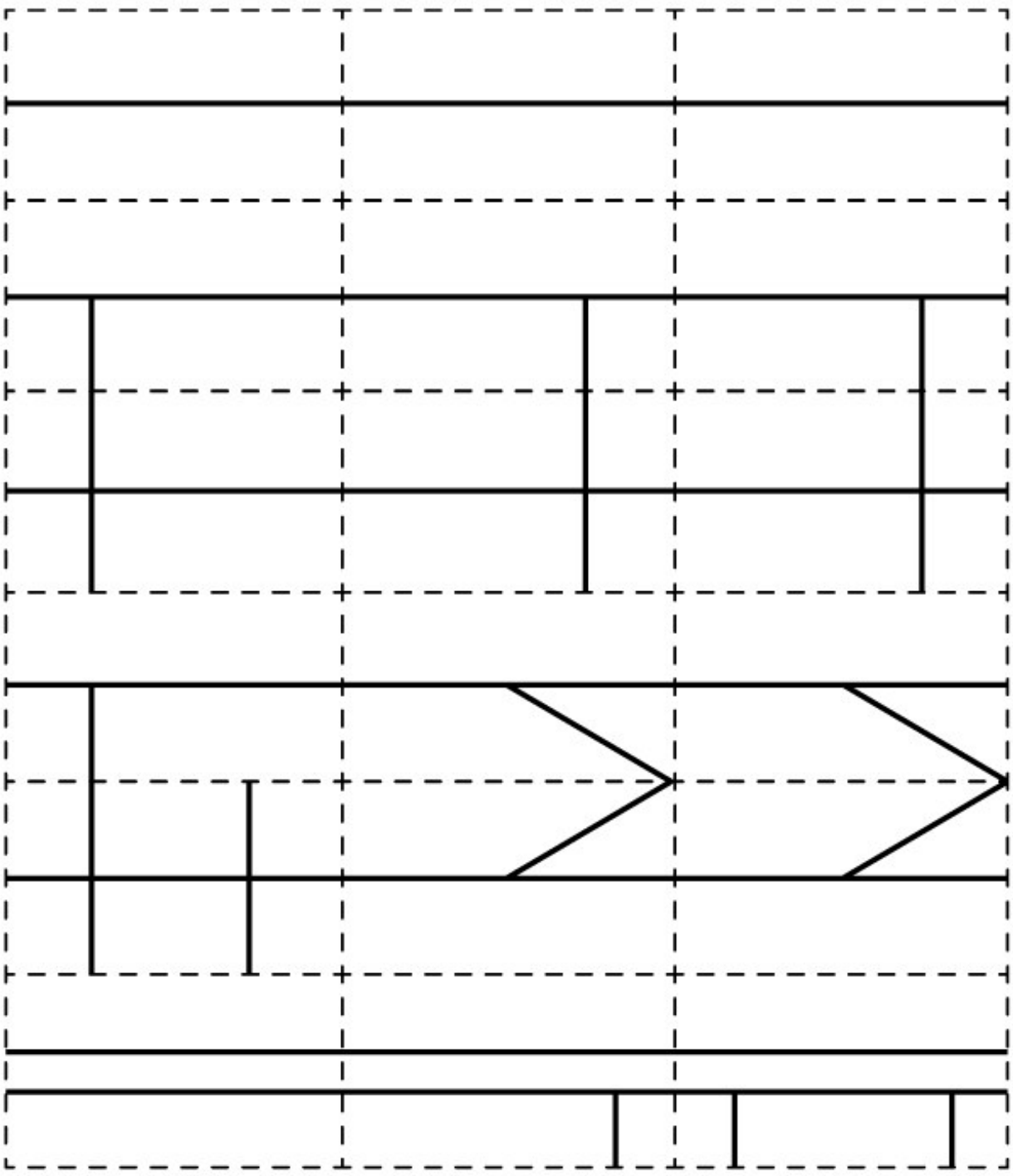


- Perpendicular lines are two straight lines that meet at a right angle:



Activity sheet 6

This activity sheet is for use with Y4 Home Activity 7



8 Squares and Rectangles

This activity will help your child to recognise and draw squares and rectangles. It will also help them remember pairs of numbers that make twelve when multiplied together, and calculate perimeters of squares and rectangles.

Important words and phrases:

- width, wide
- length, long
- perimeter
- rectangle
- square
- estimate

You will need:

- Activity sheet 7, cut into 12 squares of equal size

What to do:

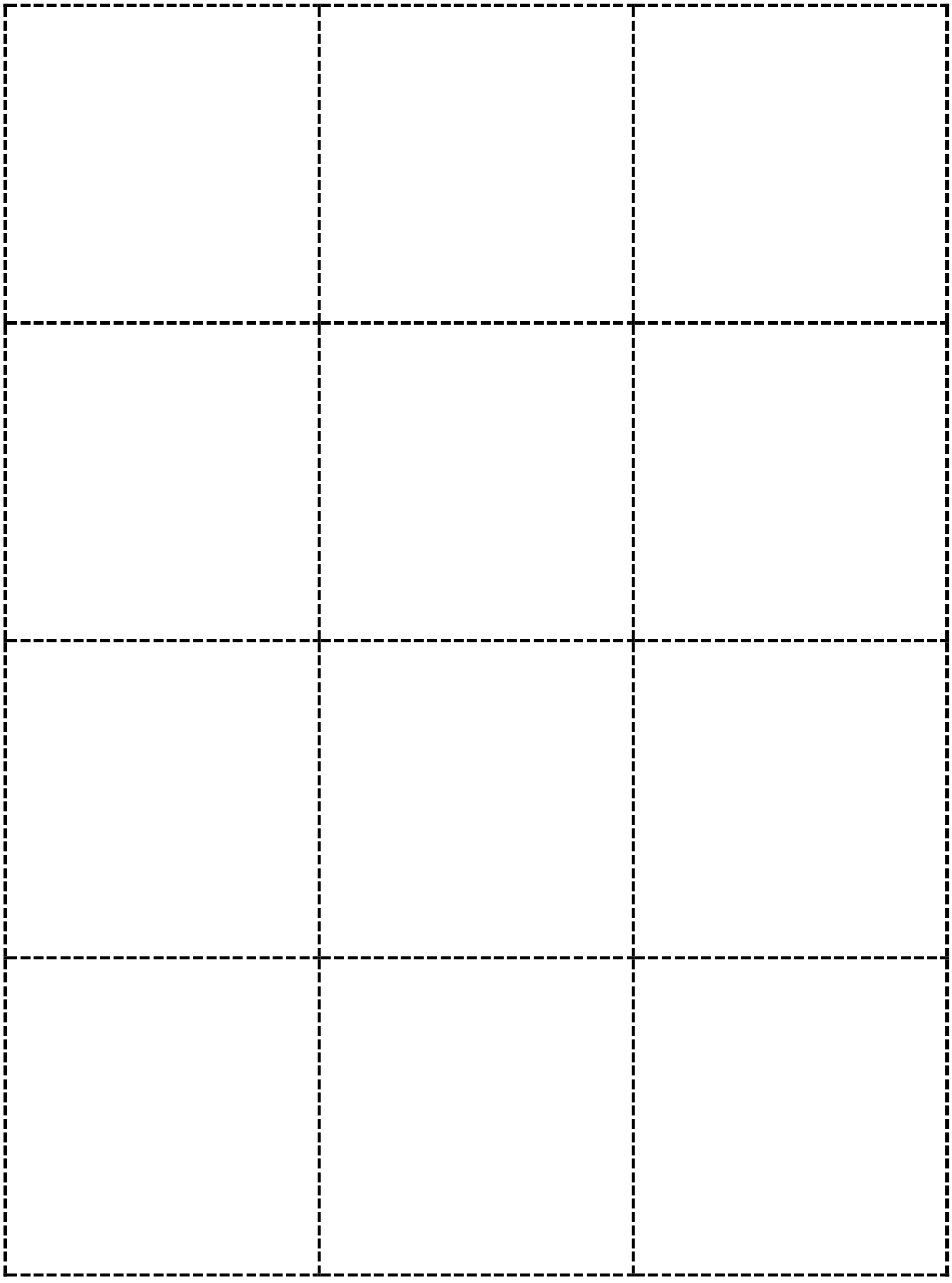
- Lay out the 12 squares from Activity sheet 7.
- Ask your child: *"Can you make a square out of two squares?"* (No) *"What about a rectangle?"* (Yes)
- Ask: *"How many different squares and rectangles can you make out of 3 squares? 4 squares? 5? 6…?"*
- Use any number of the squares to make a composite shape (a shape made up of squares and rectangles), for example an 'L' shape.
  Ask your child to identify the squares and rectangles in the shape that you have made.
- Tell your child that the side of each square is 5cm, and ask them to find out the perimeter of the shape that you have made. Repeat with different composite shapes, and ask your child to make their own composite shapes and find the perimeter.

Talk about:

- Ask your child to look out for squares and rectangles that are made up of smaller squares and rectangles. Tiling patterns, chessboards and window panes are all examples.
- Estimate the width and height of the large shape by estimating or measuring the height and width of the small squares or rectangles it contains first; for example, ask:
  - *"How wide do you think the tile is? How long is it? What is the perimeter of the tile?"*
  - *"How many tiles wide is the wall? How many tiles high? So how wide is the wall? How tall is it? What is its perimeter?"*

Activity sheet 7

This activity sheet is for use with Y4 Home Activity Unit 8



9 Decimal domino puzzle

This activity will help your child to practise decimal and fraction conversions, and relate digits in a decimal number to tenths, hundredths and thousandths.

Important words and phrases:

- fraction
- decimal
- tenths, hundredths, thousandths

You will need:

- Activity sheet 8, cut into numbered and blank domino cards

What to do:

- Shuffle the numbered domino cards (Set 1) from Activity sheet 8 and place them face up on the table. Your child should join them, fraction-to-decimal, to make a big square of dominoes. Each fraction should match an equivalent decimal.
- Next, help your child to make their own domino puzzle set, using the blank cards (Set 2). Suggest they get started by writing a fraction on the right-hand side of the first domino. On the left-hand side of the second domino, they should write the equivalent decimal.
- Finally, your child should write a decimal to complete the left-hand side of the first domino and an equivalent fraction to complete the right-hand side of the final domino.

Talk about:

- In class, your child has encountered numbers with up to three decimal places. Look out for decimal numbers used in the news and adverts. Ask: *"How many tenths are in this decimal number? How many hundredths? How many thousandths?"*

Look out for:

- Help your child to choose only fraction-decimal pairs that they know or can work out. Your child hasn't yet learned about recurring decimals (such as 0.3333…), so they should avoid thirds, sixths and ninths. Check the pairs before your child writes them on the dominoes.

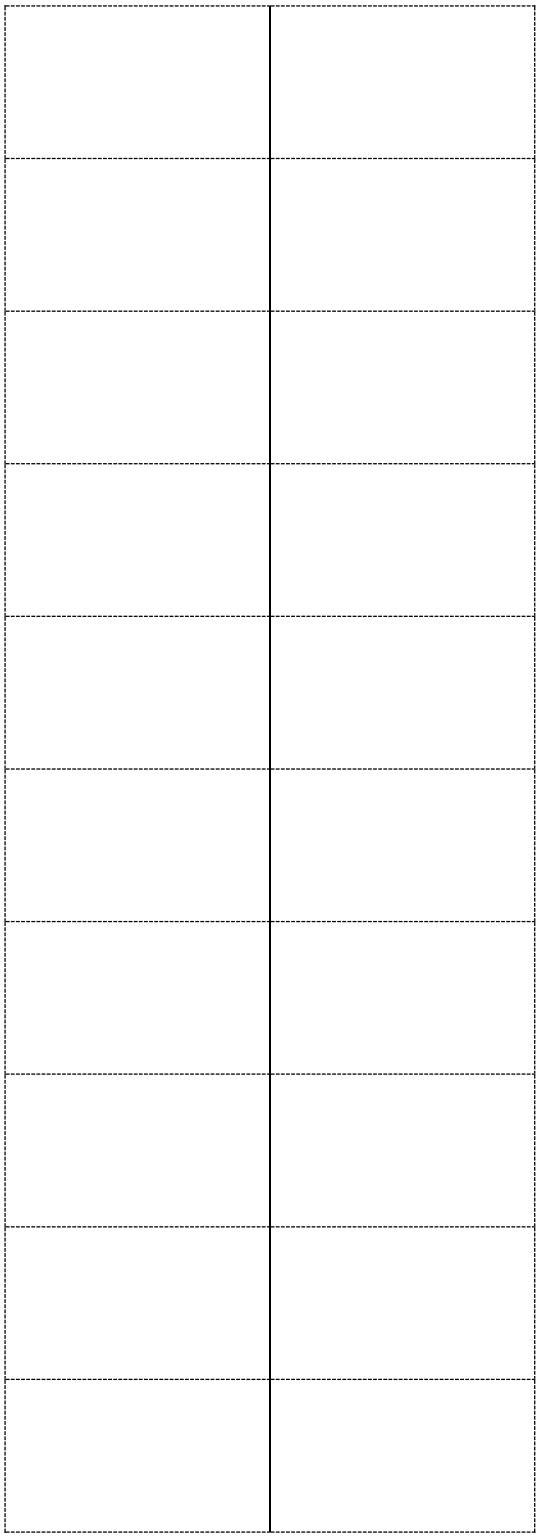
Activity sheet 8

This activity sheet is for use with Y4 Home Activity 9

Set I

0.5	$\frac{3}{4}$
0.75	$1\frac{1}{5}$
1.2	$\frac{1}{4}$
0.25	$\frac{7}{5}$
1.4	$1\frac{1}{4}$
1.25	$1\frac{2}{5}$
1.4	$1\frac{23}{50}$
1.46	$\frac{783}{1000}$
0.783	$\frac{16}{25}$
0.64	$\frac{1}{2}$

Set 2



10 Decimal number puzzles

This activity will help your child to practise adding and subtracting decimal numbers.

Important words and phrases:

- add
- total
- plus
- subtract
- decimals
- tenths, hundredths
- change

You will need:

- Activity sheet 9
- pencil
- eraser
- paper

What to do:

- Help your child complete the number puzzles on Activity sheet 9. Each side of each shape should add up to the same total.
- On the first shape, they fill in the blanks. Start by adding the numbers in the top row to see what each side should add up to (2.34).
- On the second shape, they write the numbers from the list. They should write softly, so they can change their minds and rub out what they have written!
- On the third and fourth shapes, they should use their own choice of decimal numbers. Each side should add up to the same total.

Talk about:

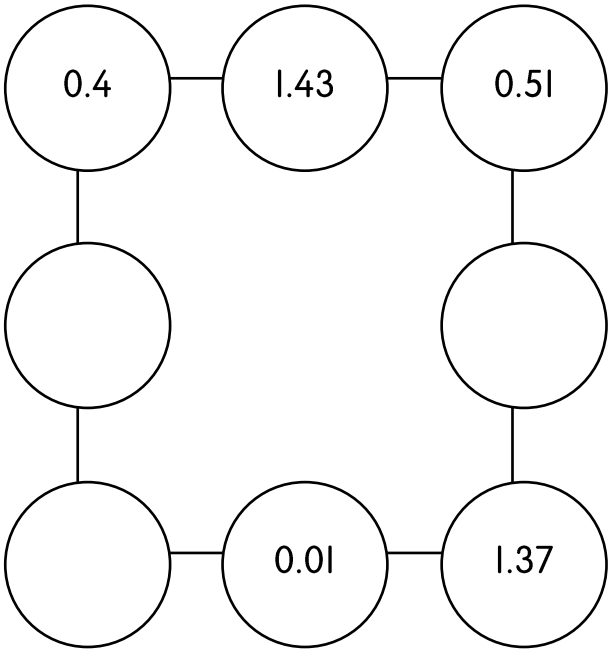
- Ask your child to add and subtract decimal numbers with one or two decimal places. For example, ask: *"What's 5.67 plus 3.45? What's 4.92 subtract 3.45?"* Your child will probably need a pencil and paper to work these out.
- When you are out shopping with your child there are plenty of opportunities to ask about money as well: *"What's £4.56 + £3.92? How much change will you get from £7 if you spend £6.23?"*
- Ask your child what a number is made up of. For example, 3.45 is made up of $3 + \frac{4}{10} + \frac{5}{100}$.

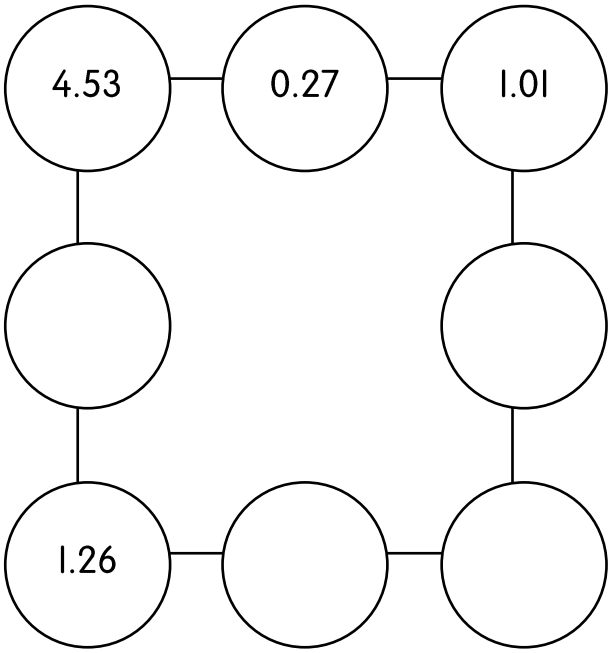
Look out for:

- Remember that digits to the left of the decimal point are whole numbers, and digits to the right of the decimal point are smaller parts of a whole number.

Activity sheet 9

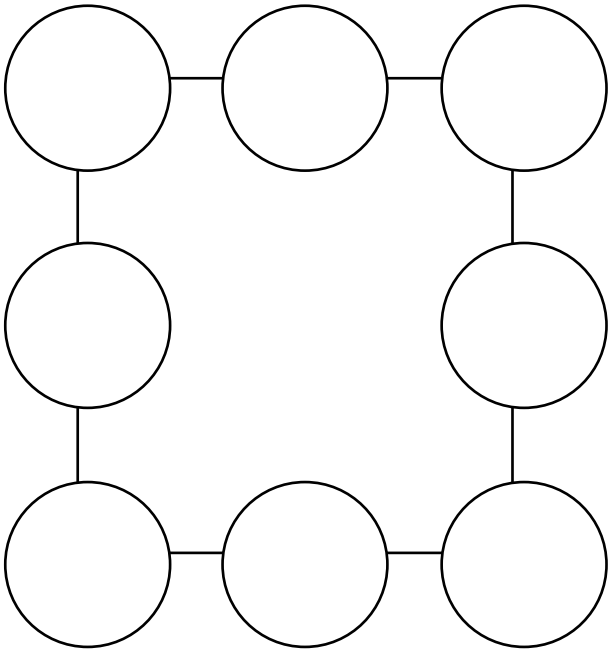
This activity sheet is for use with Y4 Home Activity 10

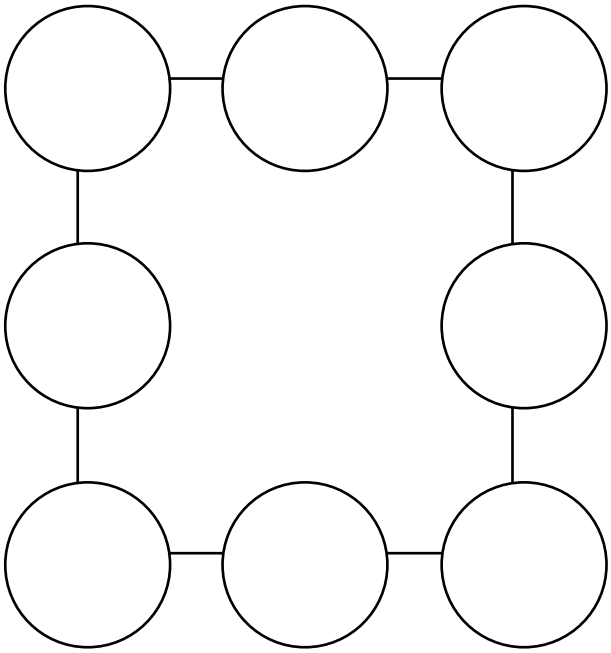




Use the following numbers:

0.02
4.35
0.2
4.6





11 Journey times

This activity will give your child practice in solving problems involving time.

Important words and phrases:

- hour
- minute
- ago
- time
- It takes…

You will need:

- Activity sheet 10

What to do:

- Work through the questions on Activity sheet 10 with your child. You can explain that the meeting times are chosen to suit Jamie's train time.
- Ask your child questions about real-life appointments you might make. For example: "*If we were meeting Josh at 4pm on Saturday in the park, when would we need to leave the house? When do you think Josh would need to leave?"*

Talk about:

- Practise arithmetic using time. Ask, for example: *"What time is it now? What time will it be in half an hour? What will the time be in an hour and a half? What time was it three and a quarter hours ago? What time was it 4 hours and 17 minutes ago?"*

Look out for:

- The answers to the questions on the activity sheet are as follows:

  1. Jamie: 13:00; Amir: 12:30; Bethan: 16:10.
  2. Jamie needs to leave the house at 12:25.
  3. Jamie's train arrives at 13:05. Amir needs to leave at 09:05. Bethan needs to leave at 12:45.

Activity sheet 10

This activity sheet is for use with Y4 Home Activity 11

Train timetable

Trains to Doncaster leave at:

12:20	13:00	14:00	15:00

Jamie, Amir and Bethan are meeting at Doncaster train station.

Jamie's train journey takes 2 hours 45 minutes.

Amir can drive to Doncaster in 4 hours.

Bethan can walk there in 20 minutes.

1. The friends decide to meet at 16:30. What time does Jamie need to catch a train and what time do Amir and Bethan need to leave home?

2. To catch the train, Jamie needs to leave his house 35 minutes before the train leaves. What time does Jamie need to leave the house to meet his friends?

3. The friends decide to meet earlier. Jamie's train arrives 3 hours 25 minutes before their original meeting time. When should Amir and Bethan leave if they want to meet Jamie at the station?

12 Area and perimeter

This activity involves investigating area and perimeter, and encourages your child to think about the relationship between the two.

Important words and phrases:

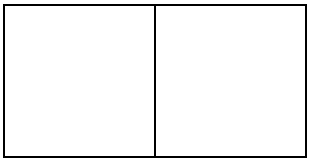
- perimeter
- area
- centimetre

You will need:

- Activity sheet 11, with the 4 squares cut out.
- ruler
- squared paper
- string

What to do:

- Explain that the squares from Activity sheet 11 should be laid side by side, so that squares next to each other have the whole of one side along the neighbouring square's side.
  For example:



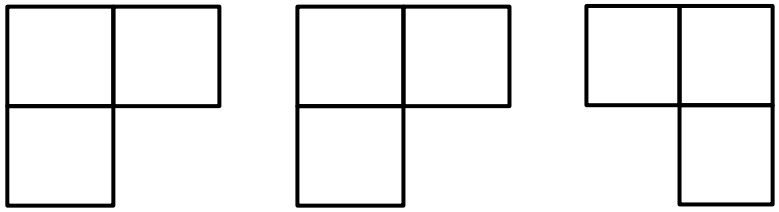
- Ask: *"How many different shapes can you make using all four squares?"*
- Ask your child to draw the four shapes. The drawings don't need to be the same size as the paper shapes.
- Look out for rotations or reflections of the shapes, and discuss these. For example: *"This looks like a shape you've already drawn. How could you make it fit over the other shape exactly?"* (Turn it round/turn it over.)
- Ask your child to find the perimeter of each of the four shapes, by using a ruler or the sides of the squares on the squared paper (which each measure 7cm).
- Next, your child should find the area of each shape by counting the squares (they might quickly realise they don't need to count).
- Discuss how you know that each shape has the same area. Ask your child which shapes have the same perimeter. Can your child explain why not all the perimeters are the same?

Talk about:

- You could encourage your child to find some flat objects around the house and trace their shape onto squared paper. You can measure their perimeters with a ruler, or by measuring a piece of string that fits around them. Compare the areas of the different shapes to their perimeters.

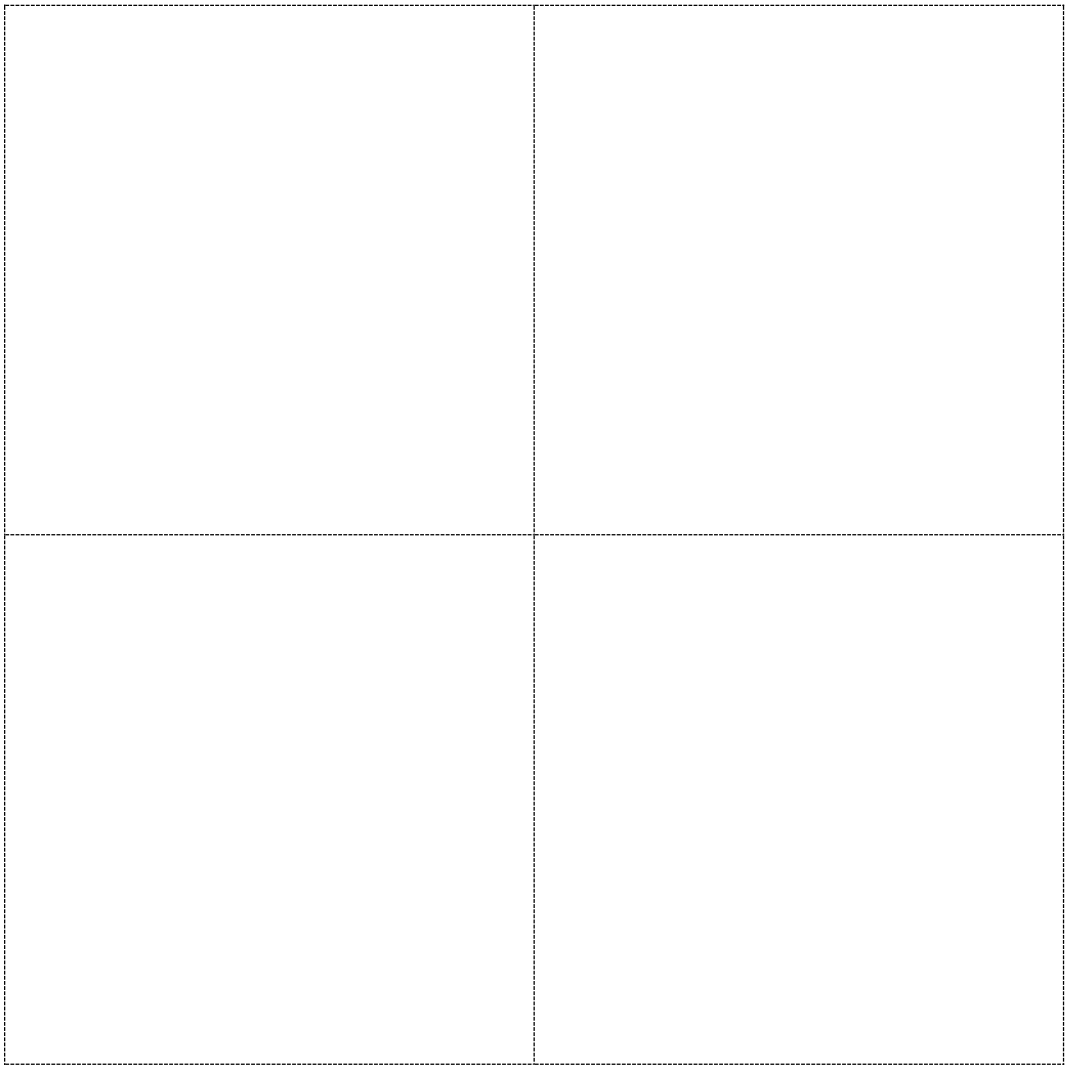
Look out for:

- A rotation of a shape is when the shape stays the same but is turned around. For example, in this series of shapes the third shape is rotated 90° to the right:



Activity sheet II

This activity sheet is for use with Y4 Home Activity 12



13 Symmetry

This activity gives your child practice in identifying symmetrical objects and their lines of symmetry.

Important words and phrases:

- symmetrical
- line of symmetry

You will need:

- Activity sheet 12, cut into 4 L shapes
- paper (optional)
- pencil (optional)
- ruler (optional)
- camera (optional)

What to do:

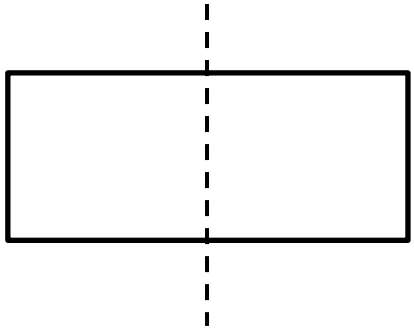
- Ask your child to look around your home or local area for objects that are symmetrical and objects that are not.
- They could draw a picture of each object, or you might take and print a photograph of some of them if you have the equipment.
- Help your child to label each picture 'symmetrical' or 'not symmetrical', and draw in any lines of symmetry.
- Cut out the four L shapes on Activity sheet 12. Ask: *"Can you arrange two of the shapes to make a symmetrical shape? How many lines of symmetry does your shape have?"*
- Now ask your child to make another shape, but this time using all four shapes. Ask: *"How many lines of symmetry does your shape have? Can you make more symmetrical shapes using the four L shapes?"*

Talk about:

- Continue looking for symmetrical objects around the home, particularly those with more than one line of symmetry. Ask: *"Are things made by people or things in nature more likely to be symmetrical?"*

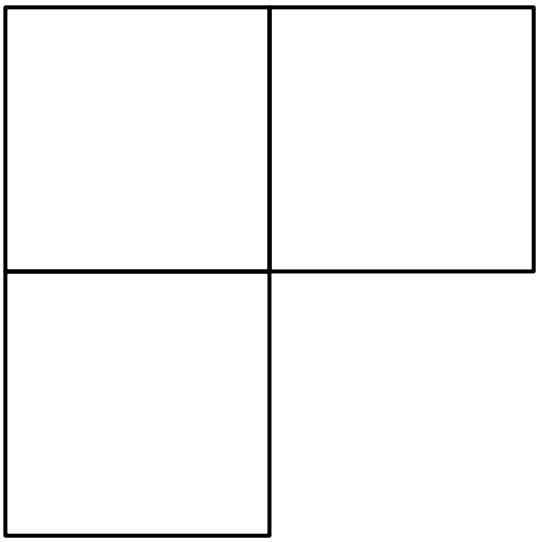
Look out for:

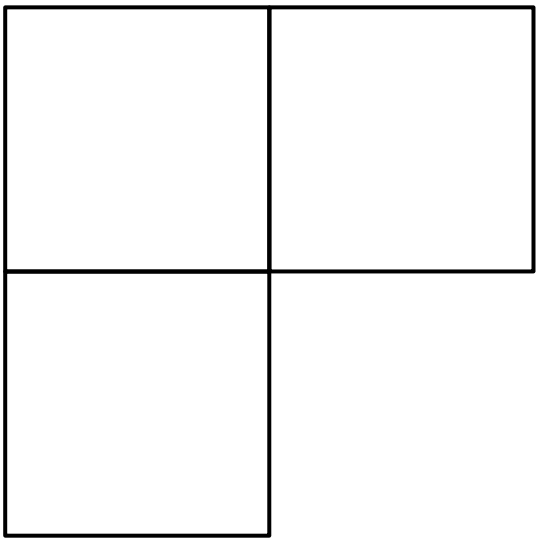
- A symmetrical shape has a line of symmetry which divides the shape into two equal parts. For example, in the shape below the dotted line indicates the line of symmetry:

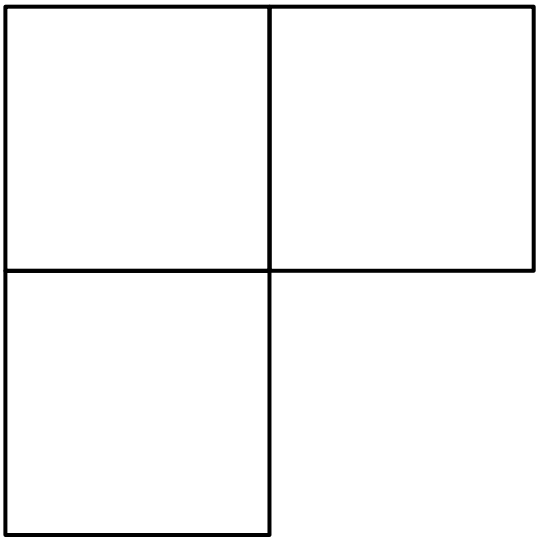


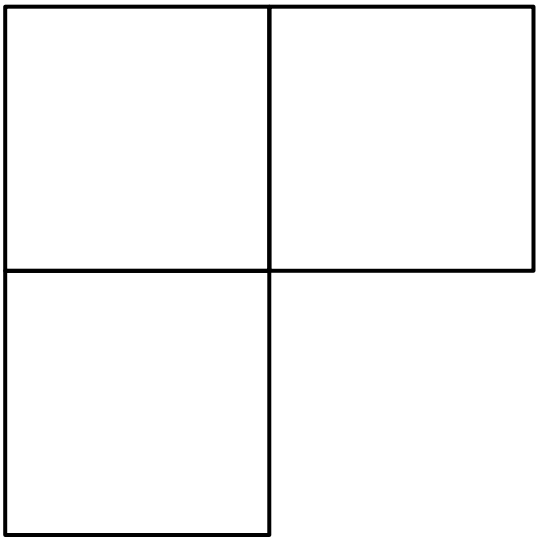
Activity sheet 12

This activity sheet is for use with Y4 Home Activity Unit 13









14 Tessellations

This activity will help your child to identify and create tessellations.

Important words and phrases:

- tessellation
- tessellate
- tessellating
- tile

You will need:

- paper
- pencil
- scissors
- glue

What to do:

- Look around your home and neighbourhood for paving stones, brickwork or tiling patterns that tessellate.
- Encourage your child to sketch or, if you have a camera, photograph some of the tessellating patterns they find.
- Use the sketch or photograph to make multiple copies of the tile or tiles used in each pattern. (If available, you could use a computer and a printer).
- Your child should use the tiles to make a copy of the pattern, by sticking them on paper. Stick the photograph or sketch next to the pattern they have made.

Talk about:

- Discuss why it is important that tiles tessellate. Ask: *"Are there any pavements or walls nearby where the stones don't tessellate? What is in the spaces between the tiles?"*

Look out for:

- Ensure that your child understands that a tessellation is a repeating pattern of one or more shapes (called tiles) with no gaps and no overlaps. Examples of shapes that tessellate include squares, equilateral triangles and regular hexagons (which are hexagons whose sides and angles are all the same size).

