Reasoning and Problem Solving – Horizontal and Vertical

National Curriculum Objectives:

Mathematics Year 3: (3G2) Identify horizontal and vertical lines

Differentiation:

Questions 1, 4 and 7 (Reasoning)
Developing Explain how much time has to pass before the minute hand of a clock makes a vertical or horizontal line. Time gaps in 15 minute intervals only.
Expected Explain how much time has to pass before the hour hand of a clock makes a vertical or horizontal line. Time gaps in hours and 5 minute intervals.
Greater Depth Explain the time gap until the next, or from the last time the hour hand made a vertical or horizontal line. Time gaps in hours and 1 minute intervals.

Questions 2, 5 and 8 (Problem Solving)
Developing Work out which child has the most vertical or horizontal lines in the letters of their name. 2 children with short names.
Expected Work out which child has more vertical or horizontal lines in the letters of their name than a given name. 4 children with longer names.
Greater Depth Write two names which have more vertical and horizontal lines in their letters than a given name. Long names used.

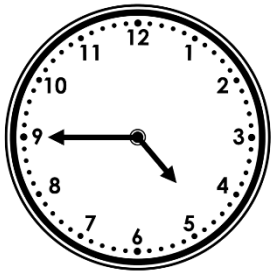
Questions 3, 6 and 9 (Reasoning)
Developing Explain which shape is the odd one out in terms of lines of symmetry (horizontal and vertical). 3 simple shapes in the same style used.
Expected Explain which shape is the odd one out in terms of lines of symmetry (horizontal and vertical). 4 more complex shapes in 2 different styles used.
Greater Depth Explain which shape is the odd one out in terms of lines of symmetry (horizontal and vertical). 5 very complex shapes in 5 different styles used.

More resources which follow the same small steps as White Rose.

Did you like this resource? Don't forget to review it on our website.

Reasoning and Problem Solving – Horizontal and Vertical

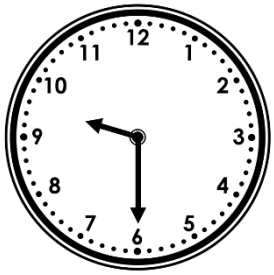
1a. Richard is waiting for the minute hand of the clock to make a vertical line. This is the time now:



Explain how long he will have to wait for a vertical minute hand.

D R

1b. Sonya is waiting for the minute hand of the clock to make a horizontal line. This is the time now:



Explain how long she will have to wait for a horizontal minute hand.

D R

2a. Al and Sam are writing their names in capital letters. Which friend has the most horizontal lines in the letters of their name?

AL

SAM

D PS

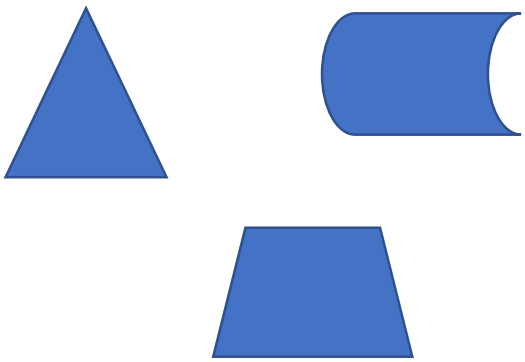
2b. Tom and Ed are writing their names in capital letters. Which friend has the most vertical lines in the letters of their name?

TOM

ED

D PS

3a. Which of these shapes is the odd one out when it comes to lines of symmetry? Explain your answer.



D R

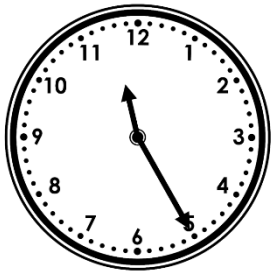
3b. Which of these letters is the odd one out when it comes to lines of symmetry? Explain your answer.

E W C

D R

Reasoning and Problem Solving – Horizontal and Vertical

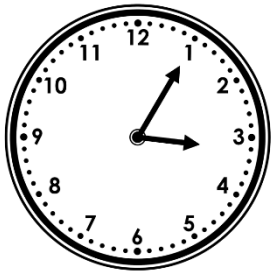
4a. Danyaal is waiting for the hour hand of the clock to make a horizontal line. This is the time now:



Explain how long he will have to wait for a horizontal hour hand.

E R

4b. Max is waiting for the hour hand of the clock to make a vertical line. This is the time now:



Explain how long he will have to wait for a vertical hour hand.

E R

5a. Blake and his friends are writing their names in capital letters. Which friend has more vertical lines in the letters of their name than Blake?


BLAKE


LIZ


ALLI


HANK

E PS

5b. Lara and her friends are writing their names in capital letters. Which friend has more horizontal lines in the letters of their name than Lara?


LARA

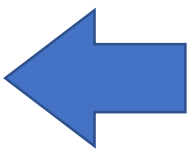

OWEN


FAZL


MOLLY

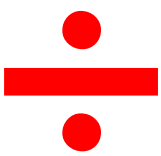
E PS

6a. Which of these shapes and letters is the odd one out when it comes to lines of symmetry? Explain your answer.



E R

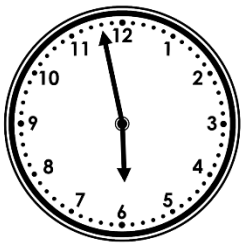
6b. Which of these shapes is the odd one out when it comes to lines of symmetry? Explain your answer.



E R

Reasoning and Problem Solving – Horizontal and Vertical

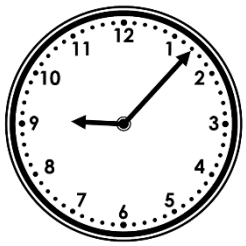
7a. Kiril is working out when the hour hand of the clock makes a horizontal line. This is the time now:



Explain how many hours and minutes away the time is from the closest horizontal hour hand.

GD R

7b. Aamaya is working out when the hour hand of the clock makes a vertical line. This is the time now:



Explain how many hours and minutes away the time is from the closest vertical hour hand.

GD R

8a. Isabella has written her name in capital letters.

ISABELLA

Using capital letters, write a name with more vertical lines in it than 'Isabella', then write a name with more horizontal lines in it than 'Isabella'.

GD PS

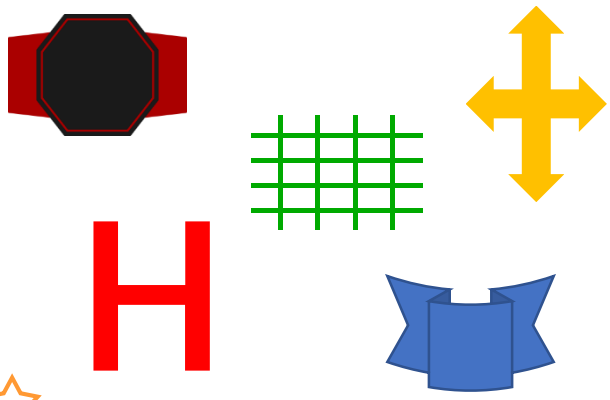
8b. Ellis has written his name in capital letters.

ELLIS

Using capital letters, write a name with more vertical lines in it than 'Ellis', then write a name with more horizontal lines in it than 'Ellis'.

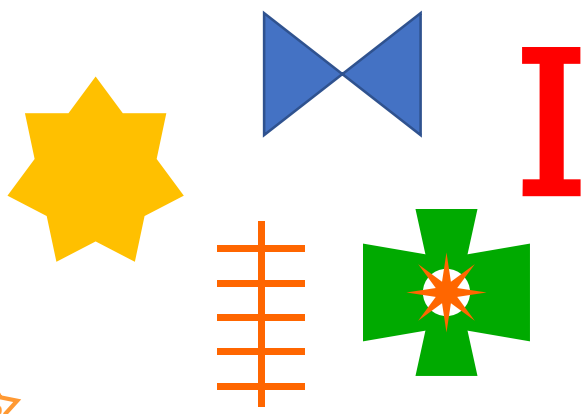
GD PS

9a. Which of these shapes is the odd one out when it comes to lines of symmetry? Explain your answer.



GD R

9b. Which of these shapes is the odd one out when it comes to lines of symmetry? Explain your answer.



GD R

Reasoning and Problem Solving – Horizontal and Vertical

Developing

1a. He will have to wait for 15 minutes. The next time the minute hand will be vertical is at 5:00, which is 15 minutes after the time shown.
1b. She will have to wait for 15 minutes. The next time the minute hand will be horizontal is at 9:45, which is 15 minutes after the time shown.
2a. Al has 2 horizontal lines while Sam has 1 horizontal line.
2b. Tom has 3 vertical lines while Ed has 2 vertical lines.
3a. The curved shape (top right) is the odd one out. It is the only shape with a horizontal line of symmetry.
3b. The letter W (top right) is the odd one out. It is the only shape with a vertical line of symmetry.

Expected

4a. He will have to wait for 3 hours, 35 minutes. The next time the hour hand will be horizontal is at 3:00, which is 3 hours, 35 minutes after the time shown.
4b. He will have to wait for 2 hours, 55 minutes. The next time the hour hand will be vertical is at 6:00, which is 2 hours, 55 minutes after the time shown.
5a. Hank has more vertical lines in the letters of his name than Blake.
5b. Fazl has more vertical lines in the letters of his name than Lara.
6a. The arrow (top left) is the odd one out. It is the only shape that does not have a vertical line of symmetry.
6b. The division sign (bottom right) is the odd one out. It is the only shape with both a horizontal and a vertical line of symmetry.

Greater Depth

7a. The time is 2 hours, 58 minutes away from the nearest horizontal hour hand. The closest time to the time shown when the hour hand would be horizontal is 3:00, which is 2 hours, 58 minutes before the time shown. The hour hand can also be horizontal at 9:00 which is 3 hours, 2 minutes after the time shown.
7b. The time is 2 hours, 53 minutes away from the nearest vertical hour hand. The closest time to the time shown when the hour hand would be vertical is 12:00, which is 2 hours, 53 minutes after the time shown. The hour hand can also be vertical at 6:00 which is 3 hours, 7 minutes before the time shown.
8a. The name 'Isabella' (as shown) has 5 vertical lines and 9 horizontal lines in its letters. Any name which a child writes with more than 5 vertical or 9 horizontal lines in its letters is a correct answer.
8b. The name 'Ellis' (as shown) has 4 vertical lines and 7 horizontal lines in its letters. Any name which a child writes with more than 4 vertical or 7 horizontal lines in its letters is a correct answer.
9a. The banner (bottom right) is the odd one out. It is the only shape that does not have a horizontal line of symmetry.
9b. The heptagram (left) is the odd one out. It is the only shape that does not have a horizontal line of symmetry.