Australian Curriculum Year 3 Mathematics Sample assessment |  Sample response

Exploring 3D objects, angles and symmetry

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| Exploring 3D objects, angles and symmetry are all around us. |
| **You will:**   * describe 3D objects * compare and identify angles * find symmetry * find angles and symmetry in letters. |

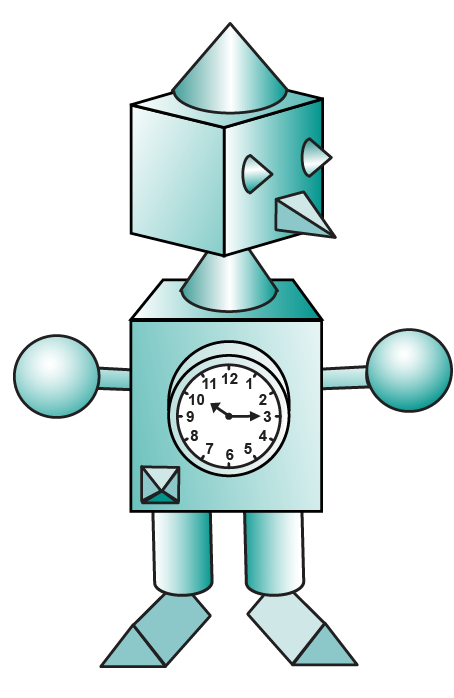
## Section 1. Describing 3D objects

1. Look at models of the 3D objects in the table below.

Complete the table to identify the features.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **3D object** | How many? | | | | | | |
| square faces | rectangular faces | circular faces | triangular faces | curved surfaces | vertices | edges | |
| cone |  |  | 1 |  | 1 | 1 | 1 | |
| cube | 6 |  |  |  |  | 8 | 12 | |
| cylinder |  |  | 2 |  | 1 |  | 2 | |
| rectangular prism |  | 6 |  |  |  | 8 | 12 | |
| sphere |  |  |  |  | 1 |  |  | |
| square-based pyramid | 1 |  |  | 4 |  | 5 | 8 | |
| triangular prism |  | 3 |  | 2 |  | 6 | 9 | |

Dale built this robot from 3D objects, including one with a clock.



triangular prism

sphere

cube

cylinder

cone

square-based pyramid

1. Use the shape names from the box below to label the 3D objects that Dale used to build his robot.

(Not all shapes were used).

|  |  |  |  |
| --- | --- | --- | --- |
| 3D objects | | | |
| square-based pyramid | cone | rectangular prism | sphere |
| cube | triangular  prism | cylinder | triangular  pyramid |

Dale decided to use the same 3D objects to build a robot dog for his robot.

|  |  |  |  |
| --- | --- | --- | --- |
| 3D objects | | | |
| square-based pyramid | cone | rectangular prism | sphere |
| cube | triangular  prism | cylinder | triangular  pyramid |

1. What 3D object would you choose for the dog’s head? Why?

I would choose a sphere as it is the roundest object and dog’s heads are usually round.

1. What 3D object would you use for the dog’s tail? Why?

I would choose a cylinder as cylinders can be long and thin which makes them look like a dog’s tail.

1. Would square-based pyramids be a good choice for the dog’s ears? Why or why not?

Yes, a square-based pyramid would be a good choice for the dog’s ears because they are wide at the bottom and pointy at the top. Square-based pyramids look like triangles and dog’s ears can sometimes look like triangles too.

**Information for teachers:** These responses are a sample only. Accept other responses where the description of mathematical thinking demonstrates a connection of mathematical understandings of the 3D object selected to its purpose.

## Section 2. Comparing and identifying angles

Dale and the robot left to go to the park at quarter past ten.

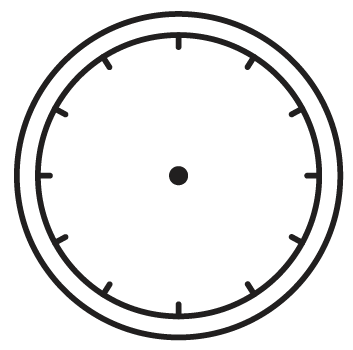
When they arrived, the robot’s clock showed half past ten.

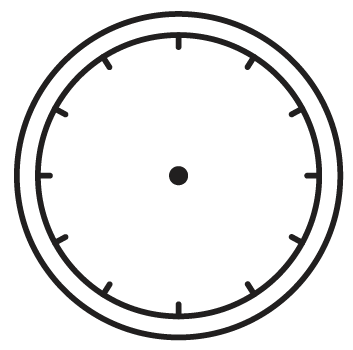
|  |  |  |
| --- | --- | --- |
| Yr 3 Exploring 3D shapes,angles and symmetry_clock 10-15 |  | Yr 3 Exploring 3D shapes,angles and symmetry_clock 10-30 |

1. What size turn did the minute hand have to make to show half past ten?

Circle the answer.

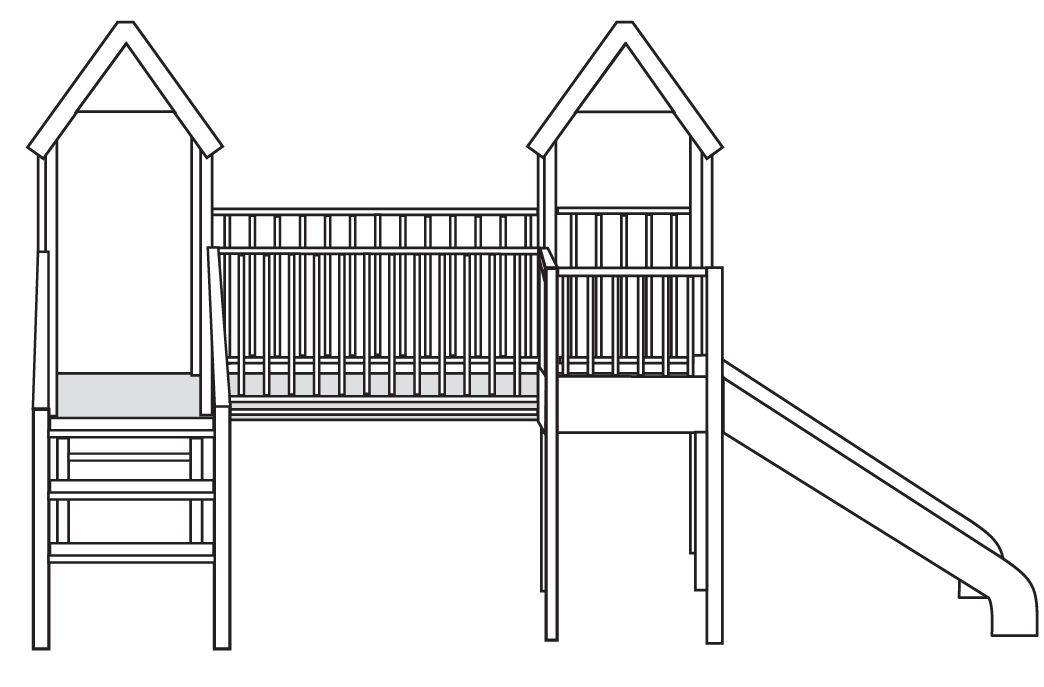
**a half turn a quarter turn**

1. Draw this hand when it has moved another quarter turn.
2. Draw this hand when it has moved another quarter turn.

Dale sees a fort at the park.

1. Find 5 angles on the fort that are right angles.

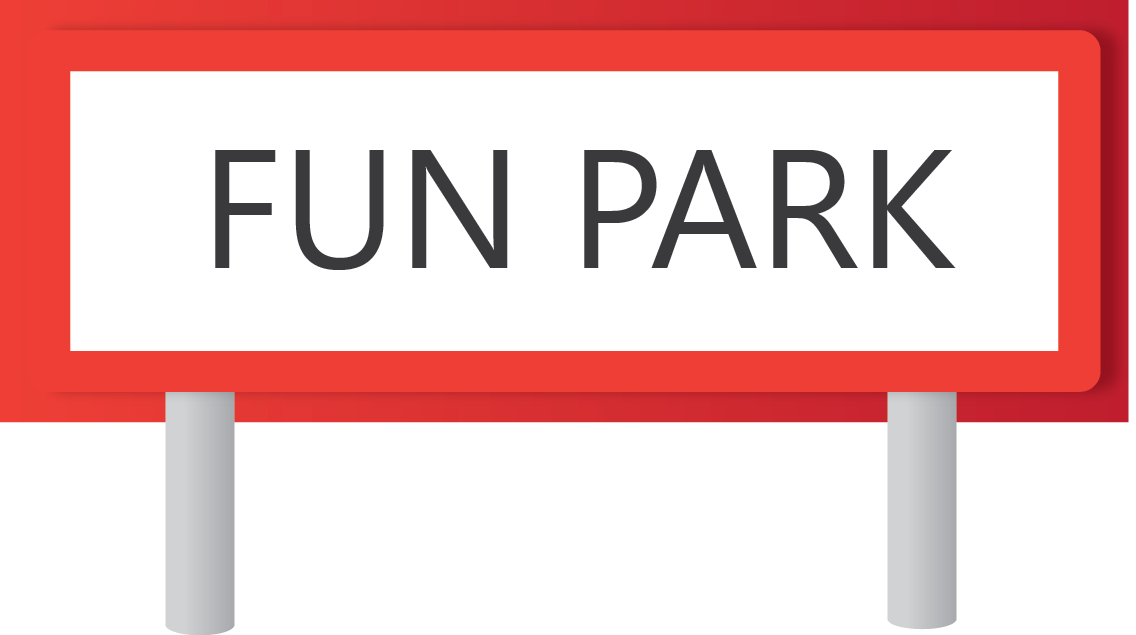
Mark the angles using one colour.



1. Find 3 angles on the fort that are different from a right angle.

Mark the angles using a different colour.

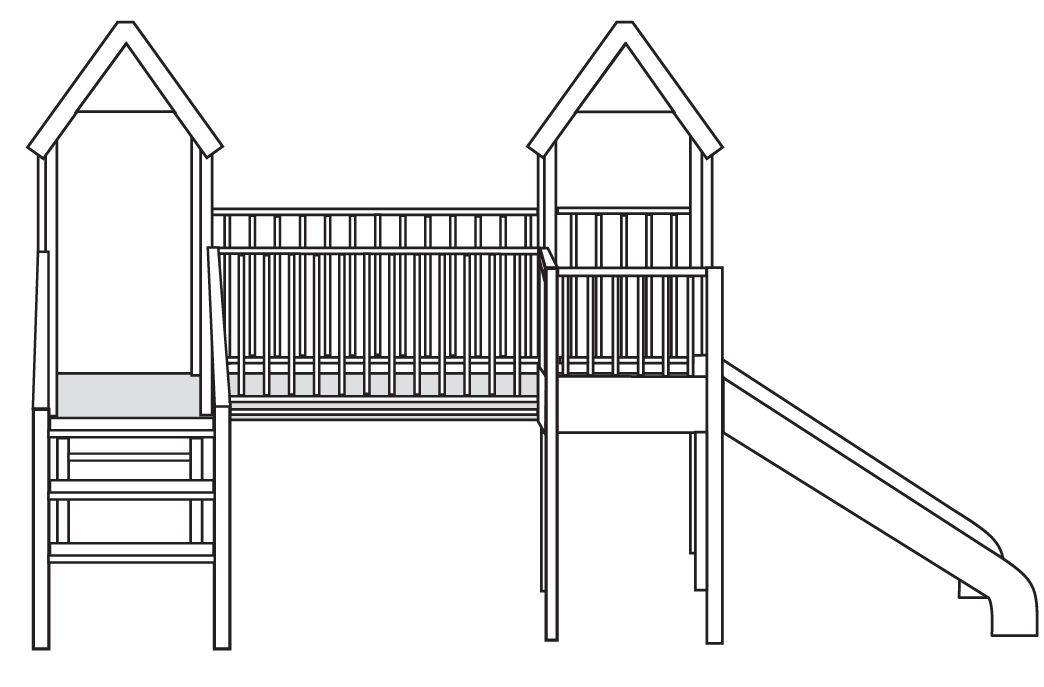
1. Circle any letter that has two or more different sized angles.



## Section 3. Finding symmetry

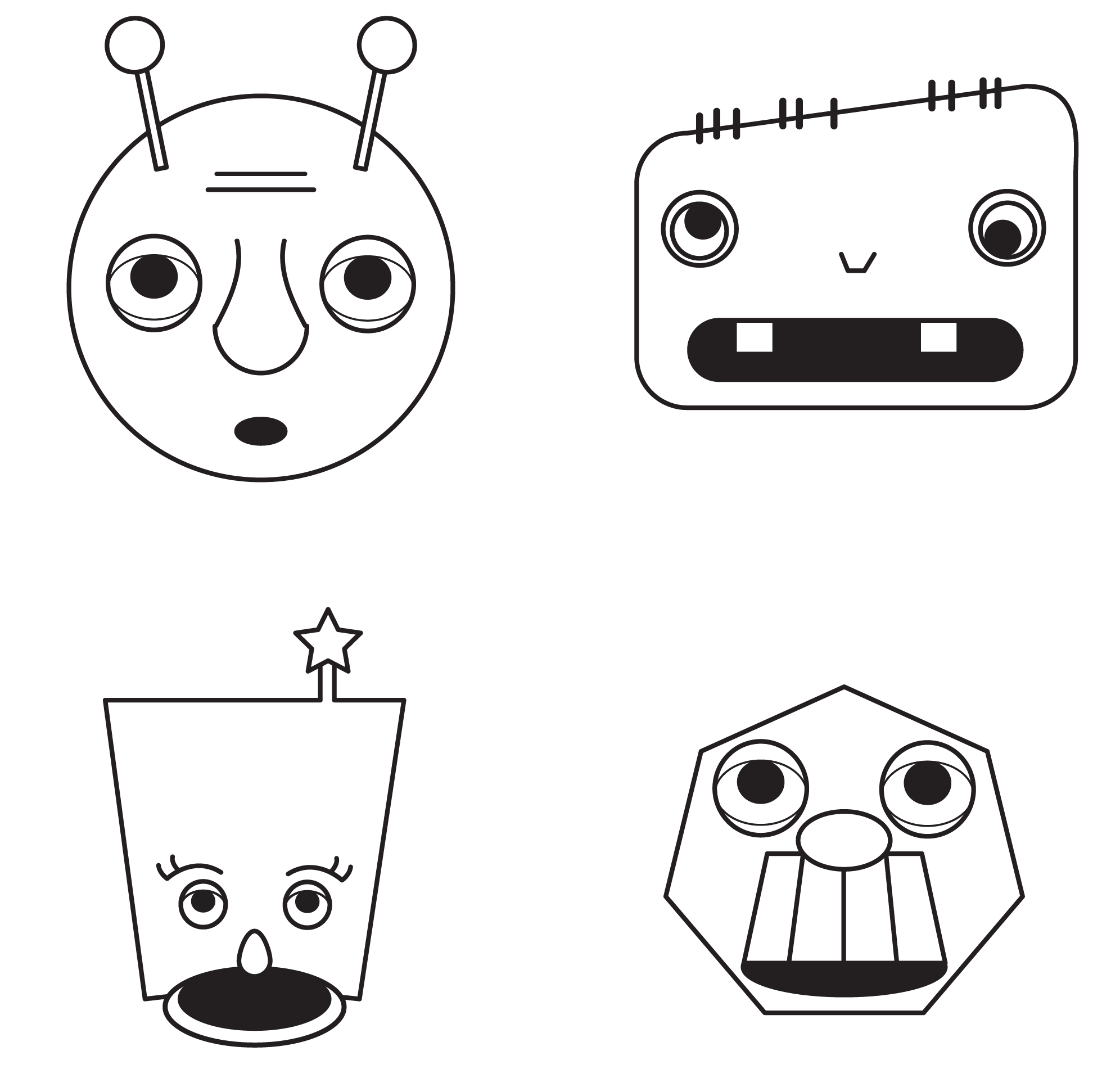
Dale is looking for shapes with symmetry at the park.

1. Draw one line of symmetry on the arrow.
2. Circle a part of the fort that has symmetry.

Draw the line of symmetry on that part.

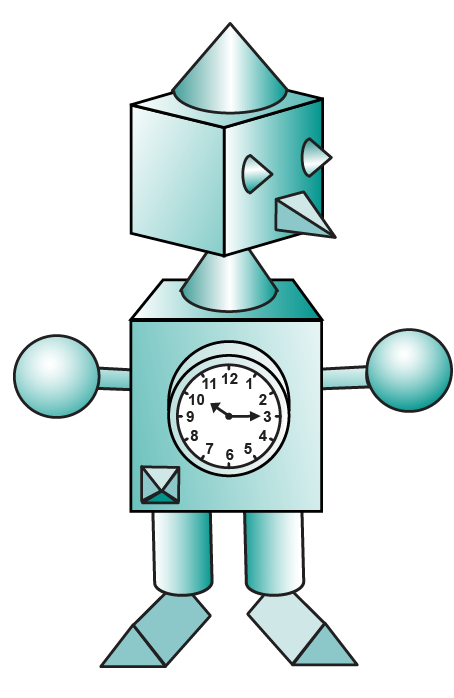
At the park, Dale drew some designs for robot faces.

1. Draw a circle around the robot faces that have symmetry.



## Section 4. Finding angles and symmetry in letters

Dale uses a puzzle to give the robot a name.



1. Look at the symmetry and the right angles in these letters.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| E | D | A | P | S | H | L |

* Read the clues in the table.
* Choose from the letters above to solve the puzzle.   
  (Not all the letters are used.)
* Write the missing letters in the table.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Letter clues | 1st  letter | 2nd letter | 3rd letter | 4th letter | 5th  letter | 6th letter |
| Number of lines of symmetry | 0 | 0 | 0 | 1 | 0 | 2 |
| Number of right angles | 0 | 3 | 1 | 0 | 0 | 4 |
| Robot’s name | S | P | L | A | S | H |

Dale wants to make a puzzle for her dog’s name.



**Hi, my name is MEX.**

1. Look at the letters of the dog’s name.

Write clues for the letters in the table.

|  |  |  |  |
| --- | --- | --- | --- |
| Letter clues | 1st letter | 2nd letter | 3rd letter |
| Number of lines of symmetry | 1 | 1 | 2 |
| Number of right angles | 0 | 4 | 0 |
| Dog’s name | M | E | X |