

# Diagnostic TASK

FOCUS

## Represent Shape

- Key Understanding 2
- Key Understanding 3

## The Coloured Cube

Ages 8–12 years

### Purpose

To reveal if the student can see in their 'mind's eye' the transformation from a 2D net to a 3D object.

### Materials

3D objects: cube (with each face coloured differently), square pyramid, square prism, triangular prism and rectangular prism

Net Sheet 1 – nets for different shapes (only 1 out of 5 is a cube)

Net Sheet 2 – different configurations for cube nets

Net Sheet 3A and 3B – both nets of cubes

Coloured pencils

Scissors

### Procedure

1. Show the student the objects and Net Sheet 1 and ask: *Can you match these nets to the objects? How do you know that they match?*

- If the student is unable to visualise which nets match each object prompt them by asking: *If we fold on the dotted lines, which one would make this object here?*
- If the student is still unsure allow them to cut out and fold the net.

Observe what the student does and says.

2. Show the student Net Sheet 2. Point to the coloured cube and ask: *Which of these nets would you be able to fold to make this? How do you know? Are there any other nets that you could fold to make a cube?*

- If the student is unable to visualise which nets would make the cube prompt them by asking: *If we fold on the dotted lines, which one would make this object here?*
- If the student is still unsure allow them to cut out and fold the nets.

Observe what the student does and says.

3. Show the student Net Sheets 3A and 3B. Point to the coloured cube and say: *Here are two nets that you could fold to make this cube. You will need to colour the faces of the nets before you fold them, and to make sure that the faces have the same colours in the same places as this cube.*

Ensure that the coloured cube does not have a red or green face as its base. Point to the coloured cube and Net Sheet 3A and say: *If this part of the net is black and this part (the base) is black, colour the faces of the net that should be coloured red and green.*

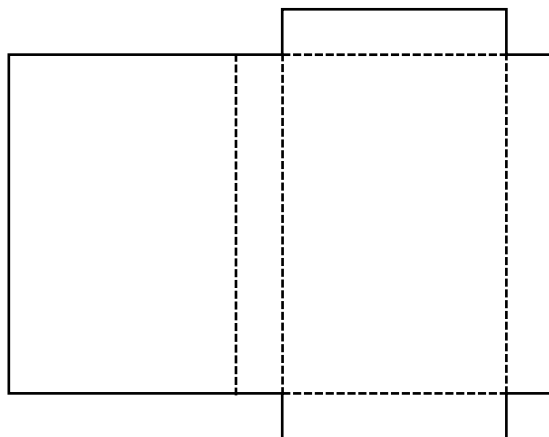
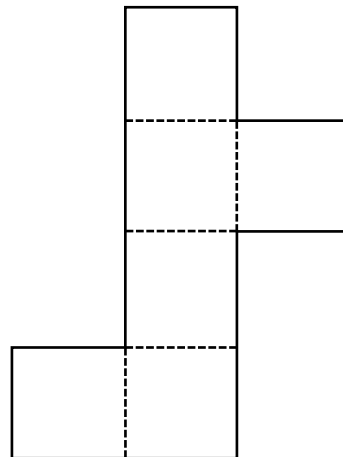
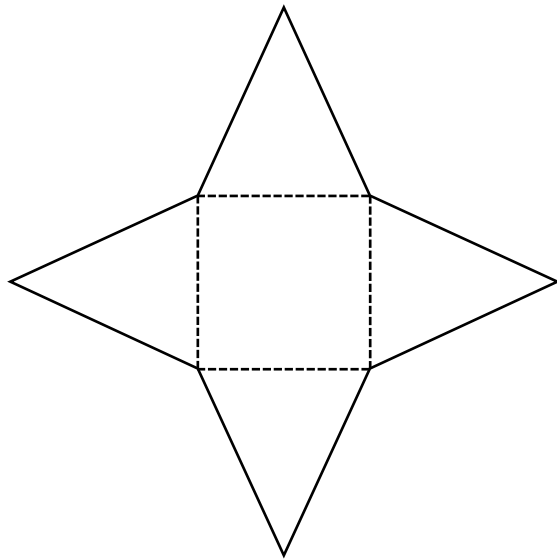
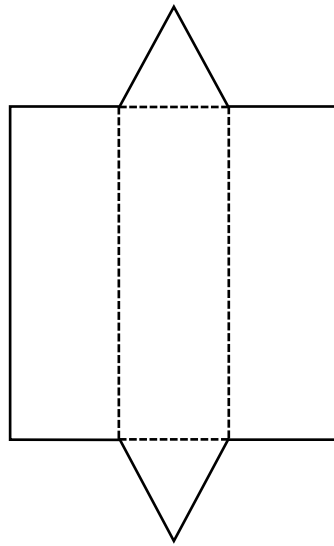
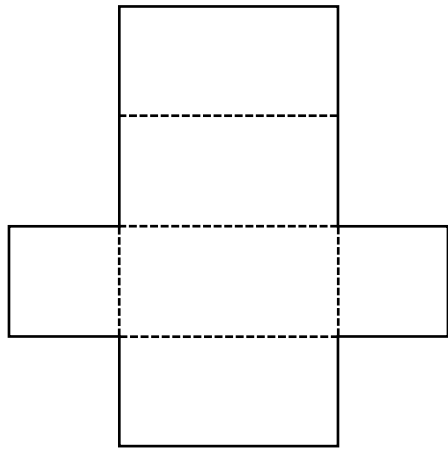
After the student has coloured the two faces ask: *How did you work out which faces to colour?*

Record the student's response.

Repeat this for Net Sheet 3B.

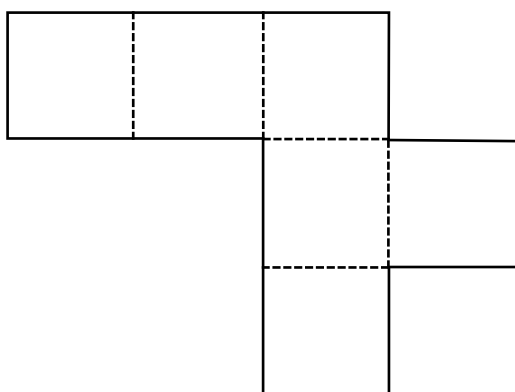
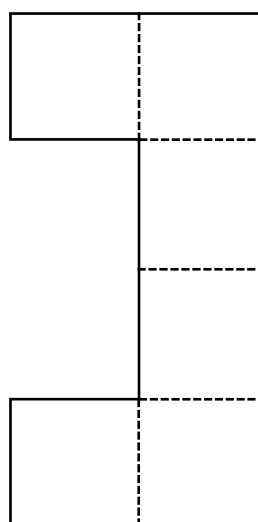
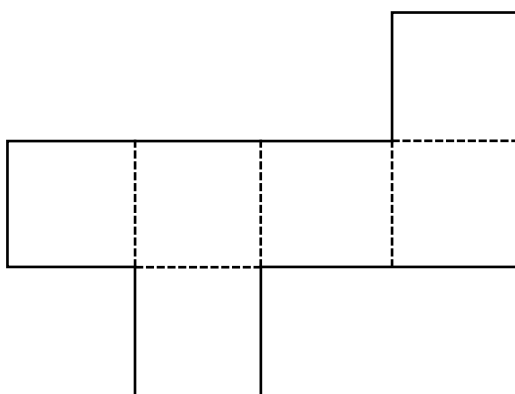
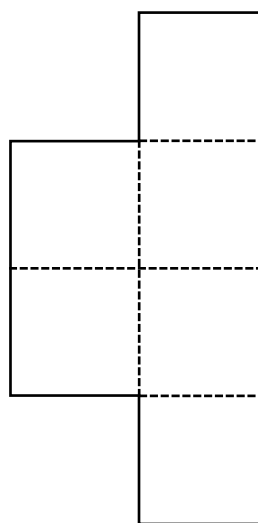
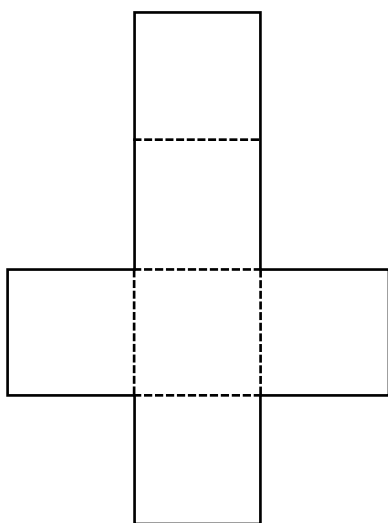
# The Coloured Cube

## Net Sheet 1



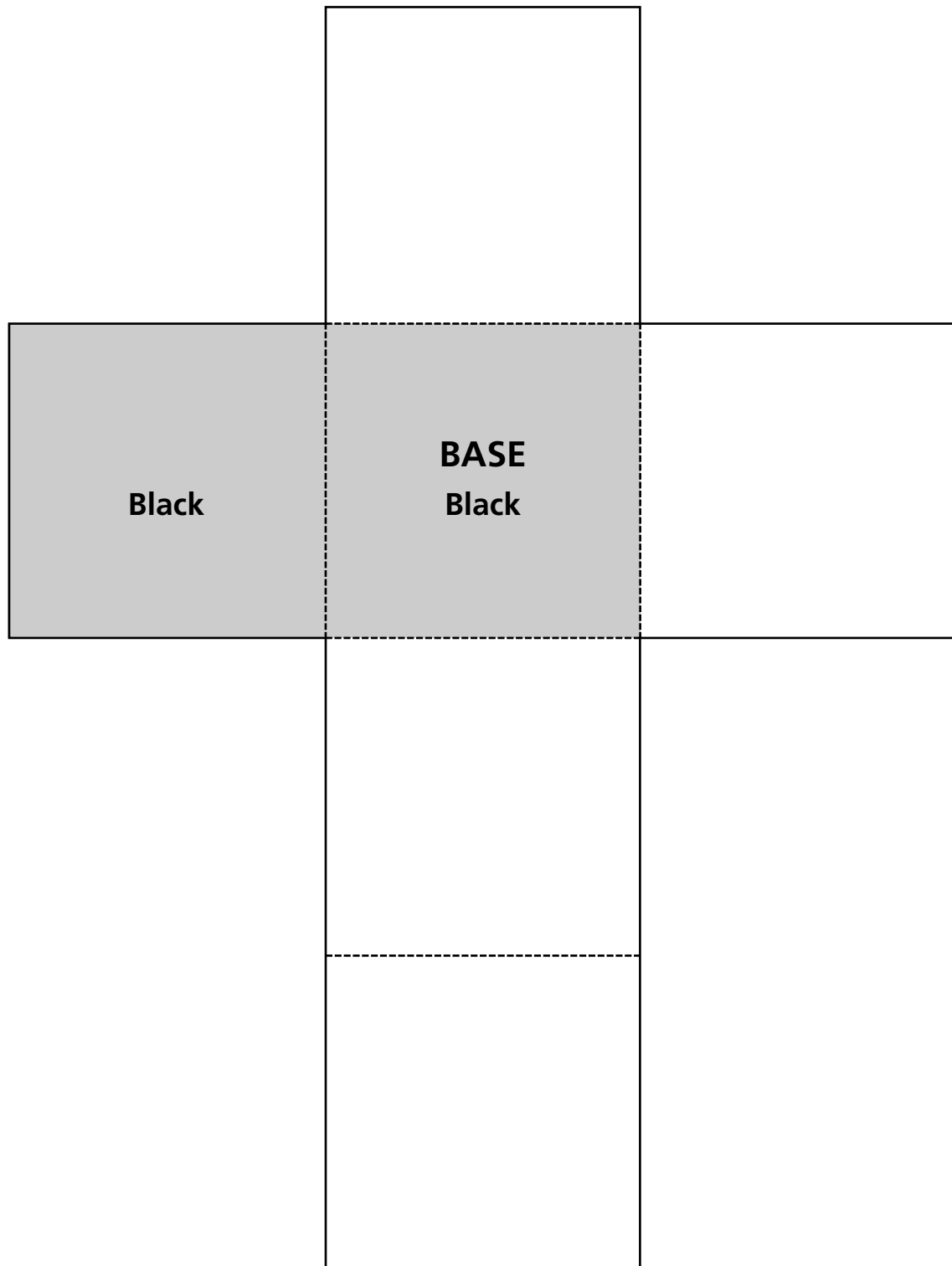
# The Coloured Cube

## Net Sheet 2



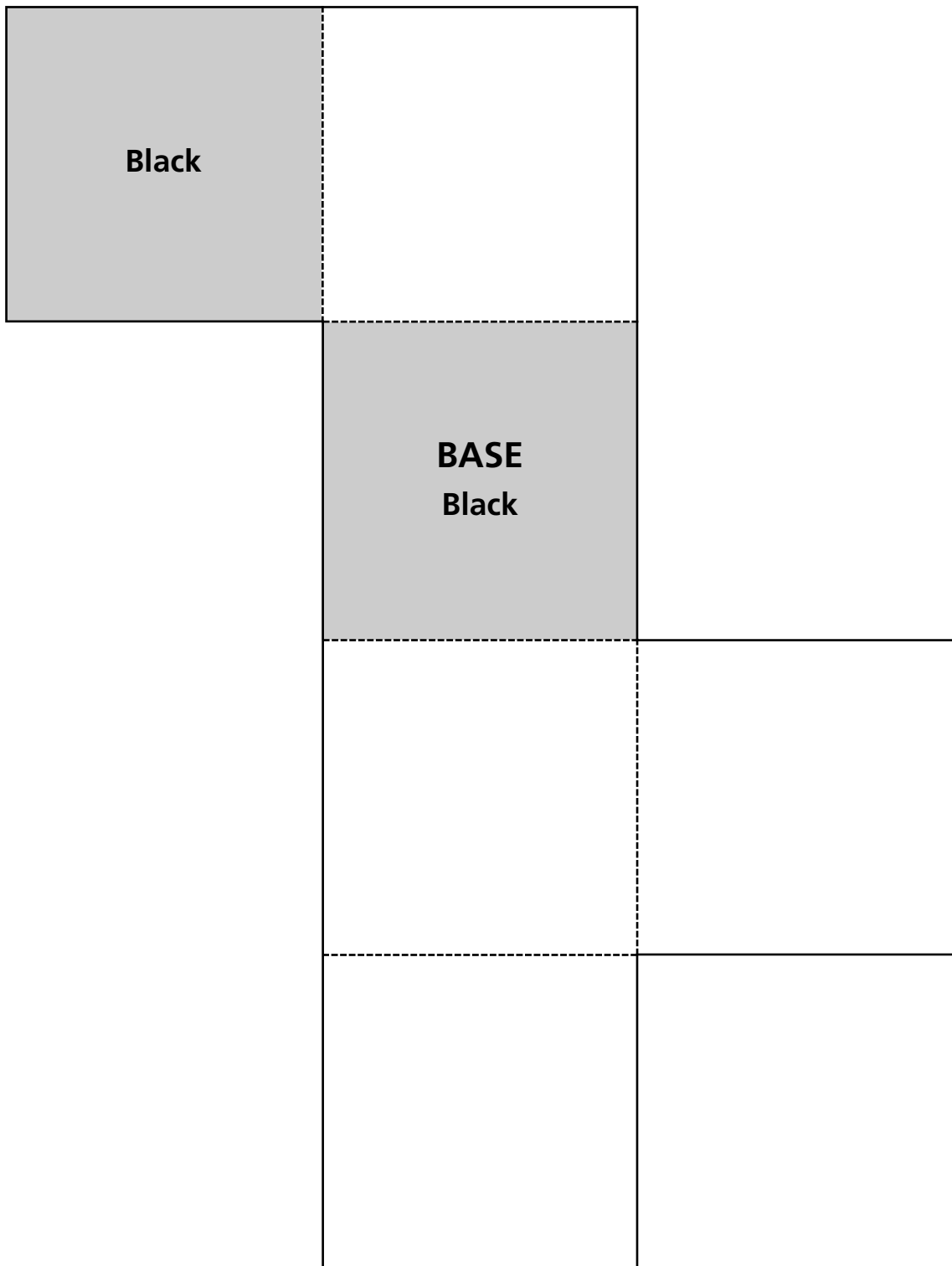
# The Coloured Cube

## Net Sheet 3A



# The Coloured Cube

## Net Sheet 3B



# The Coloured Cube: Teacher Recording Sheet

Name \_\_\_\_\_ Year \_\_\_\_\_ Date \_\_\_\_\_

## Net Sheet 1

3D Object	YES. Any additional comments?	NO. Any additional comments?
<b>Cube</b>		
<b>Square Pyramid</b>		
<b>Square Prism</b>		
<b>Rectangular Prism</b>		
<b>Triangular Prism</b>		

How do you know? (Record the responses.)

## Net Sheet 2

Can the student identify which net/nets could be used to make a cube? Yes / No

How do you know? (Record the responses.)

## Net Sheets 3A and 3B

Can the student colour the correct faces? 3A: Yes / No 3B: Yes / No

How did you work it out? (Record what the student says and does.)