Reasoning and Problem Solving
Step 3: Count Vertices on 2D Shapes

National Curriculum Objectives:

Mathematics Year 2: (2G2a) Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line

Differentiation:

Questions 1, 4 and 7 (Problem Solving)
Developing Decide which of two sets of 2D shapes have the highest/lowest number of vertices. All shapes regular and presented with the same orientation. Visual support provided.
Expected Decide which of two sets of 2D shapes have the highest/lowest number of vertices. Regular and some irregular shapes, presented with different orientations. Some visual support provided.
Greater Depth Decide which of two sets of 2D shapes have the highest/lowest number of vertices. No visual support provided.

Questions 2, 5 and 8 (Problem Solving)
Developing Complete a table by counting the number of vertices for a set of shapes. All shapes regular and presented with the same orientation.
Expected Complete a table by counting the number of vertices for a set of shapes. Regular and some irregular shapes, presented with different orientations.
Greater Depth Complete a table/sort shapes according to the number of vertices. No visual support provided.

Questions 3, 6 and 9 (Reasoning)
Developing Explain whether a set of shapes has a given total of vertices. All shapes regular and presented with the same orientation. Visual support provided.
Expected Explain whether a set of shapes has a given total of vertices. Irregular and some regular shapes, presented with different orientations. Some visual support provided.
Greater Depth Explain whether a set of shapes has a given number of vertices. No visual support provided.

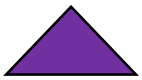
More Year 2 Properties of Shape resources.

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

Count Vertices on 2D Shapes

1a. Joshua and Isaac each have some shapes.


Isaac


triangle


square


circle


Joshua


pentagon


triangle


rectangle

How many vertices do they each have?
Who has the most number of vertices?

D PS

1b. Lucy and Isabel each have some shapes.


Lucy


rectangle


square


octagon


Isabel


pentagon


pentagon


triangle

How many vertices do they each have?
Who has the fewest number of vertices?

D PS

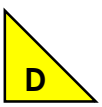
2a. Complete the table with the shapes below.

fewer than 5 vertices	5 or more vertices


A


B


C

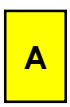

D


E

D PS

2b. Complete the table with the shapes below.

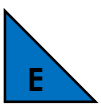
fewer than 6 vertices	6 or more vertices


A


B


C

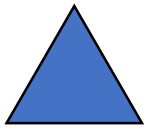

D

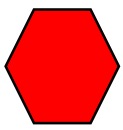

E

D PS

3a. Courtney wants to collect a total of 9 vertices. She says,

I need a triangle and a hexagon.



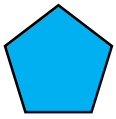


Is she correct? Explain how you know.

D R

3b. Jamie wants to collect a total of 12 vertices. He says,

I need a rectangle and a pentagon.

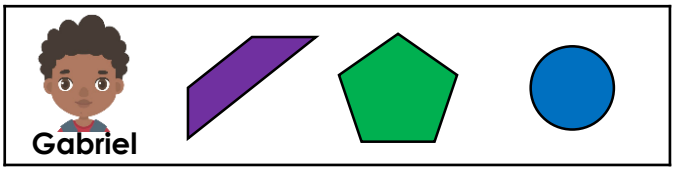


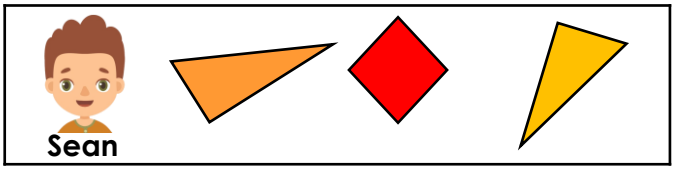
Is he correct? Explain how you know.

D R

Count Vertices on 2D Shapes

4a. Gabriel and Sean each have some shapes.



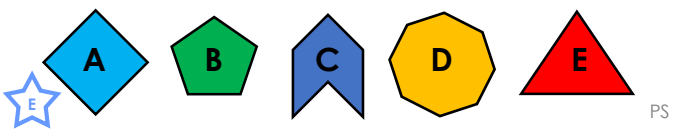


How many vertices do they each have?
Who has the most number of vertices?

E PS

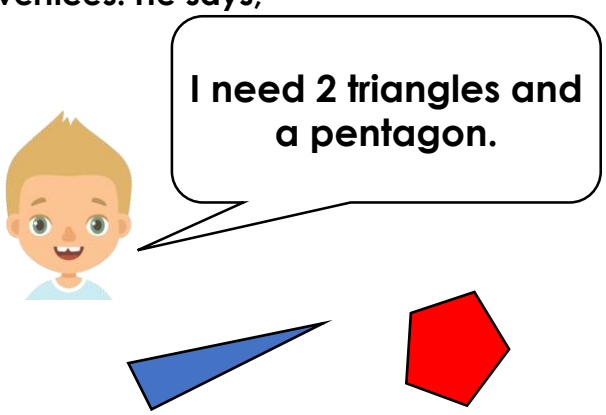
5a. Complete the table with the shapes below.

fewer than 5 vertices	5 or more vertices



E PS

6a. Cian wants to collect a total of 9 vertices. He says,

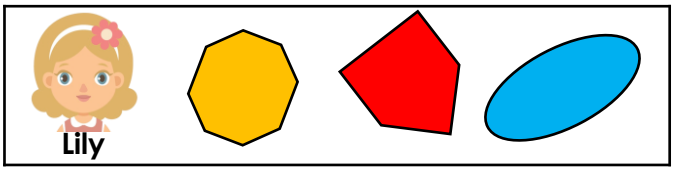


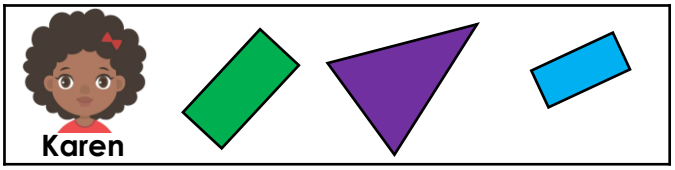
Is he correct? Explain how you know.

E R

Count Vertices on 2D Shapes

4b. Lily and Karen each have some shapes.



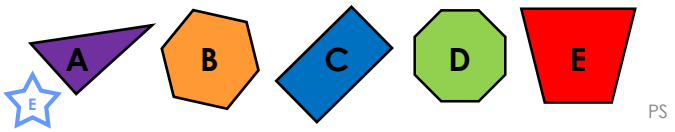


How many vertices do they each have?
Who has the fewest number of vertices?

E PS

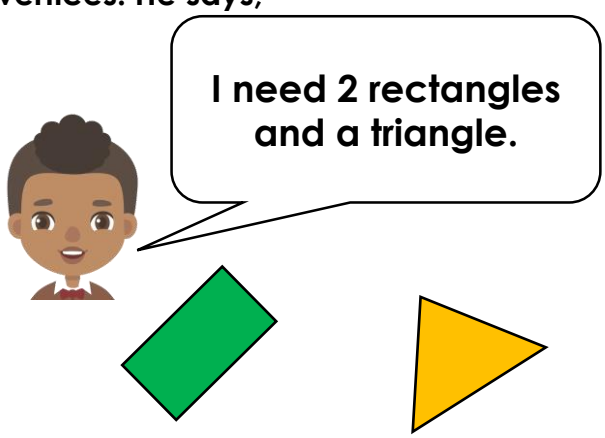
5b. Complete the table with the shapes below.

fewer than 5 vertices	6 or more vertices



E PS

6b. Jal wants to collect a total of 11 vertices. He says,



Is he correct? Explain how you know.

E R

Count Vertices on 2D Shapes

7a. Jon and Alice each have some shapes.

Jon

I have a pentagon, 3 triangles and an oval.

Alice

I have a square, an octagon and a hexagon.

How many vertices do they each have?
Who has the most number of vertices?

GD PS

Count Vertices on 2D Shapes

7b. Sameema and Polly each have some shapes.

Sameena

I have 2 rectangles, an octagon and a pentagon.

Polly

I have 3 squares and 2 hexagons.

How many vertices do they each have?
Who has the fewest number of vertices?

GD PS

8a. Complete the table. Which shape cannot be sorted into the table?

fewer than 5 vertices	6 or more vertices

pentagon triangle square
octagon hexagon

GD PS

8b. Write 2 suitable headings for the table based on the number of vertices each shape has. One shape cannot be sorted.

pentagon hexagon	triangle square

octagon

GD PS

9a. Courtney wants to collect a total of 15 vertices. She says,

I need a 3 triangles and an octagon.

Is she correct? Explain how you know.

GD R

9b. Jamie wants to collect a total of 14 vertices. He says,

I need 2 rectangles and 2 pentagons.

Is he correct? Explain how you know.

GD R

Reasoning and Problem Solving
Count Vertices on 2D Shapes

Developing

1a. Isaac has 3 + 4 + 0 = 7 vertices. Joshua has 5 + 3 + 4 = 12 vertices. Joshua has the most number of vertices.

2a. Fewer than 5 vertices: C, D and E
5 or more vertices: A and B

3a. Courtney is correct. A triangle has 3 vertices and a hexagon has 6 vertices.
3 + 6 = 9

Expected

4a. Gabriel has 4 + 5 + 0 = 9 vertices. Sean has 3 + 4 + 3 = 10 vertices. Sean has the most number of vertices.

5a. Fewer than 5 vertices: A and E
5 or more vertices: B, C and D

6a. Cian is incorrect. A triangle has 3 vertices and a pentagon has 5 vertices.
3 + 3 + 5 = 11

Greater Depth

7a. Jon has 5 + 9 + 0 = 14 vertices. Alice has 4 + 8 + 6 = 18 vertices. Alice has the most number of vertices.

8a. Fewer than 5 vertices: triangle and square; 7 or more vertices: hexagon, octagon; pentagon cannot be sorted.

9a. Courtney is incorrect. A triangle has 3 vertices and an octagon has 8 vertices.
3 + 3 + 3 + 8 = 17

Reasoning and Problem Solving
Count Vertices on 2D Shapes

Developing

1b. Lucy has 4 + 4 + 8 = 16 vertices. Isabel has 5 + 5 + 3 = 13 vertices. Isabel has the fewest number of vertices.

2b. Fewer than 6 vertices: A, C and E
6 vertices or more: B and D

3b. Jamie is not correct. A rectangle has 4 vertices and a pentagon has 5 vertices.
4 + 5 = 9

Expected

4b. Lily has 8 + 5 + 0 = 13 vertices. Karen has 4 + 3 + 4 = 11 vertices. Karen has the fewest number of vertices.

5b. Fewer than 6 vertices: A, C and E
6 or more vertices: B and D

6b. Jal is correct. A rectangle has 4 vertices and a triangle has 3 vertices.
4 + 4 + 3 = 11

Greater Depth

7b. Sameena has 8 + 8 + 5 = 21 vertices. Polly has 12 + 12 = 24 vertices. Sameena has the fewest number of vertices.

8b. Various answers, for example: fewer than 5 vertices; more than 4 vertices and fewer than 7 vertices.

9b. Jamie is incorrect. A rectangle has 4 vertices and a pentagon has 5 vertices.
4 + 4 + 10 = 18