

Shapes, Arrays and Equal Parts: practice solutions, Grade 2 – download the PDF

Written solutions to the chapter problems. Check each step, then correct yourself.

1 Name the polygon



The number of sides gives the name.

- a. 3 sides: a **triangle**.
- b. 5 sides: a **pentagon**.
- c. 4 sides: a **quadrilateral**.
- d. 6 sides: a **hexagon**.

2 Count sides and vertices



Count the dots to count the vertices: there are 6. A polygon has as many sides as vertices, so there are also 6 sides. The shape is a **hexagon**.

3 Facts about a cube



A cube has **6** faces, **12** edges and **8** vertices. Each face is a **square**.

4 Rows and columns



There are **5 rows** and **4 columns**. Each row has 4 stickers, so $4 + 4 + 4 + 4 + 4 = 20$.
There are 20 stickers.

5 Cut a sandwich



Each part is a **half**. Two halves make the whole sandwich, so the answer is **2**.

6 Name the shaded part



The circle has **4** equal parts and 1 is shaded. The shaded part is **one fourth** (a quarter).

7 True or false?



- a. **True**. A square has 4 sides.
- b. **False**. A triangle has 3 sides, so it has 3 vertices.
- c. **False**. A circle has no straight sides, so it is not a polygon.

8 Cookies on a tray



By rows there are 3 rows of 5: $5 + 5 + 5 = 15$. By columns there are 5 columns of 3:
 $3 + 3 + 3 + 3 + 3 = 15$. The tray has **15 cookies**.

9 A growing garden



Now there are 4 rows of 4 plants. $4 + 4 + 4 + 4 = 16$. There are **16 plants**. Check:
 $12 + 4 = 16$.

10 Squares in a rectangle



There are 3 rows and 4 columns. Rows: $4 + 4 + 4 = 12$. There are **12 squares**.

11 Two friends share cornbread



The pieces from a cut down the middle are rectangles, and those from corner to corner are triangles, so the shapes **differ**. In each case the 2 pieces are the same size, so each piece is still **one half**. Equal shares do not need the same shape.

12 Name the shaded fraction



The circle has **3** equal parts, so each part is **a third**. **Three** thirds make the whole circle.

13 Shape riddles



- a. A square.
- b. A hexagon.
- c. A **triangle**. Three vertices mean three sides.

14 Equal or not?



The left rectangle has 2 parts of the same size, so these are **halves**. The right rectangle has 2 parts of different sizes, so these are **not halves**. Maya is right about the left rectangle only.

15 Two cubes



One cube has 6 faces, so $6 + 6 = 12$ square faces. One cube has 12 edges, so $12 + 12 = 24$ edges. One cube has 8 vertices, so $8 + 8 = 16$ vertices.

16 Riddle with numbers



- a. A quadrilateral has 4 sides, and $4 + 2 = 6$. I am a **hexagon**.
- b. A hexagon has 6 sides, and $6 - 1 = 5$. I am a **pentagon**.
- c. $6 + 5 = 11$ sides in all.

17 The baker and her trays



First, $5 + 5 + 5 + 5 + 5 = 25$. Then $25 - 7 = 18$ muffins left. Three equal rows of 6 make $6 + 6 + 6 = 18$, so **yes**, with 6 muffins in each row.

18 Shading half and a fourth



- a. $5 + 5 + 5 + 5 = 20$ squares.
- b. Half of 20 is 10, because $10 + 10 = 20$. Shade **10** squares.
- c. Four equal groups of 5 make 20, so one fourth is **5** squares (one row).

19 Halves of different wholes



No, Ben is not right. Both are halves, but the wholes are different sizes. Half of a big pizza is more pizza than half of a small pizza. To compare fractions, the wholes must be the **same size**.

20 Which is smaller?



The **fourth** is smaller. The circle with fourths is cut into 4 equal parts, and the circle with halves into only 2. More equal parts means each part is smaller, so a fourth is smaller than a half.

21

Build an array

By rows: $5 + 5 + 5 = 15$. By columns: $3 + 3 + 3 + 3 + 3 = 15$. Adding 2 rows makes 5 rows of 5: $5 + 5 + 5 + 5 + 5 = 25$. The rug has **25 squares**.

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