Year 7 · Measurement: Perimeter, Area, Volume & Time

Name: _____ Date: _____

Hi! This sheet gives you practice with perimeter, area and volume formulae, and reading timetables. Show your working and remember your units, squared for area, cubed for volume!

Warm-up

1. Find the perimeter of a square with side length 7 cm.

2. Find the area of a rectangle that is 9 m long and 4 m wide.

3. Find the volume of a cube with side length 3 cm.

4. Which unit best measures the mass of an apple: milligram, gram, or kilogram? Explain.

Practice

5. A rectangle has a perimeter of 30 cm. Its length is 9 cm. Find its width.

6. A triangle has an area of 24 cm² and a height of 6 cm. Find the length of its base.

7. Find the volume of a rectangular prism that is 5 cm long, 4 cm wide and 3 cm high.

8. Aroha is building a rectangular vegetable garden in Avondale that is 6 m long and 2.5 m wide. She wants to put a low fence all the way around. How many metres of fencing does she need?

9. A cardboard box is a cube with a volume of 64 cm³. What is the length of one edge?

10. Tomo makes a garden path shaped like a rectangle with a triangle on one end. The rectangle is 8 m long and 3 m wide. The triangle on the end has a base of 3 m and a height of 2 m. What is the total area of the path?

Challenge

11. An L-shaped patio is made by joining two rectangles. The whole shape fits inside a 10 m by 6 m rectangle, but a 4 m by 3 m corner rectangle has been removed. Find the area and the perimeter of the L-shaped patio.

12. The 07:45 bus from New Lynn takes 35 minutes to reach Britomart. A student needs to be at Britomart by 08:30 for a study session. Does the bus arrive in time, and how many minutes to spare (or short) are there? If the student misses it and catches the next bus at 08:10 (same 35-minute trip), what time will they arrive?

Answer key (for parents and tutors)

1. Find the perimeter of a square with side length 7 cm.
   Use $P = 4l$. $P = 4 \times 7 = 28$ cm.
2. Find the area of a rectangle that is 9 m long and 4 m wide.
   Use $A = lw$. $A = 9 \times 4 = 36$ m².
3. Find the volume of a cube with side length 3 cm.
   Use $V = l^3$. $V = 3 \times 3 \times 3 = 27$ cm³.
4. Which unit best measures the mass of an apple: milligram, gram, or kilogram? Explain.
   Gram. An apple has a mass of roughly 150 g. Milligrams are far too small (used for tiny amounts) and kilograms are too large for a single apple.
5. A rectangle has a perimeter of 30 cm. Its length is 9 cm. Find its width.
   Use $P = 2(l + w)$. $30 = 2(9 + w)$, so $15 = 9 + w$, giving $w = 15 - 9 = 6$ cm.
6. A triangle has an area of 24 cm² and a height of 6 cm. Find the length of its base.
   Use $A = \frac{1}{2}bh$. $24 = \frac{1}{2} \times b \times 6 = 3b$, so $b = 24 \div 3 = 8$ cm.
7. Find the volume of a rectangular prism that is 5 cm long, 4 cm wide and 3 cm high.
   Use $V = lwh$. $V = 5 \times 4 \times 3 = 60$ cm³.
8. Aroha is building a rectangular vegetable garden in Avondale that is 6 m long and 2.5 m wide. She wants to put a low fence all the way around. How many metres of fencing does she need?
   Perimeter $P = 2(l + w) = 2(6 + 2.5) = 2 \times 8.5 = 17$ m of fencing.
9. A cardboard box is a cube with a volume of 64 cm³. What is the length of one edge?
   Use $V = l^3$. We need the number that cubed gives 64. Since $4 \times 4 \times 4 = 64$, the edge length is 4 cm.
10. Tomo makes a garden path shaped like a rectangle with a triangle on one end. The rectangle is 8 m long and 3 m wide. The triangle on the end has a base of 3 m and a height of 2 m. What is the total area of the path?
    Rectangle area = $lw = 8 \times 3 = 24$ m². Triangle area = $\frac{1}{2}bh = \frac{1}{2} \times 3 \times 2 = 3$ m². Total area = $24 + 3 = 27$ m².
11. An L-shaped patio is made by joining two rectangles. The whole shape fits inside a 10 m by 6 m rectangle, but a 4 m by 3 m corner rectangle has been removed. Find the area and the perimeter of the L-shaped patio.
    Area: full rectangle = $10 \times 6 = 60$ m². Removed corner = $4 \times 3 = 12$ m². L-shape area = $60 - 12 = 48$ m². Perimeter: walking around the L, the six sides are 10, 6, 6, 3, 4, and 3 metres. (The full outer length 10 and full outer width 6, then the step in is 3 down and 4 across for the notch, then 3 up, then back along the remaining 6.) Adding: $10 + 6 + 6 + 3 + 4 + 3 = 32$ m.
12. The 07:45 bus from New Lynn takes 35 minutes to reach Britomart. A student needs to be at Britomart by 08:30 for a study session. Does the bus arrive in time, and how many minutes to spare (or short) are there? If the student misses it and catches the next bus at 08:10 (same 35-minute trip), what time will they arrive?
    First bus: 07:45 + 35 min = 08:20. This is before 08:30, so yes it arrives in time, with 08:30 − 08:20 = 10 minutes to spare. Second bus: 08:10 + 35 min = 08:45. That would arrive 15 minutes late (after 08:30).