

# Practice Worksheet

## Mathematics 6

### Converting grams to kilograms

Write the weight of each cake in kilograms.



942 g = 0.942 kg

3



1900 g

6



1704 g

1



705 g

4



812 g

7



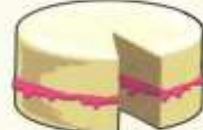
1010 g

2



1704 g

5



46 g

8



70 g

- 9 Sarah weighed 3.7 kg when she was born. She gained 125 g each week. How heavy was she in kilograms after 4 weeks? After 8 weeks?



- 10 Craig's bag of tools weighs 9.4 kg. If he takes out two sledgehammers weighing 3400 g each, how heavy is his bag now?



- 11 Tara is going backpacking. Her rucksack weighs 26 050 g. The maximum amount it can weigh is 25 kg. How much weight must she lose?



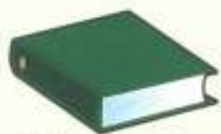
**THINK**

Estimate how much a cat weighs. About how many cats weigh the same as a person? Estimate how much an elephant weighs. About how many people weigh the same as an elephant?

I am confident with converting grams to kilograms.



Write the weight of each book in grams.



2.03 kg = 2030 g

3



4.05 kg

6



4.27 kg

1



3.104 kg

4



6.009 kg

7



0.12 kg

2



1.002 kg

5



0.85 kg

8



1.77 kg

Copy and complete these conversions.

9  $45 \text{ kg} = \square \text{ tonnes}$

13  $530 \text{ g} = \square \text{ kg}$

10  $56 \text{ kg} = \square \text{ tonnes}$

14  $7367 \text{ g} = \square \text{ kg}$

11  $4.6 \text{ tonnes} = \square \text{ kg}$

15  $54\,600 \text{ kg} = \square \text{ tonnes}$

12  $100 \text{ g} = \square \text{ kg}$

16  $10 \text{ tonnes} = \square \text{ g}$



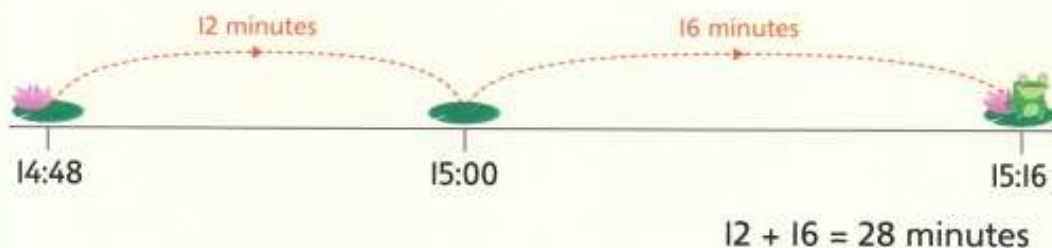
Weigh a book. Approximately how many books weigh 1 tonne? Discuss with your partner.



## Finding time intervals

Copy and complete this table to show how long each mountain biker took in a time trial.

	Start time	End time	Time taken	Position
Rory	14:48	15:16	28 minutes	
Sharon	14:54	15:32		
Eliza	15:38	16:05		
Dev	15:49	17:04		
Harrison	16:29	17:18		
Priya	16:36	18:11		
Precious	16:44	17:39		
Jack	17:37	18:18		



Dave started 2 minutes after Alice. Alice started at 12:45 and finished at 13:12. She was 4 minutes slower than Dave. What time did Dave start and finish?



I am confident with finding time intervals.

Copy and complete this table to show how long each runner took in a time trial.

	Start time	End time	Time taken	Position
Allie	09:48	12:13		
Tom	09:32	13:07		
Dave	09:41	13:27		
Shifa	09:52	14:48		
Alfie	10:41	13:36		
Nelson	10:26	14:19		
Adaya	10:35	14:17		
Emile	10:49	13:22		

Use Frog to help work out the time each runner took.



Two runners started at the same time. One was 30 minutes faster than the other. One ended the race at 15:45. What are the possible start and end times for these two runners?



I am confident with finding time intervals.

Choose how to answer these decimal subtractions.

1  $13.36 - 5.99 = \square$

9  $13.2 - 9.6 = \square$

Look at each question. Is it a 'no work', Frog or rounding question?

2  $41.37 - 20.04 = \square$

10  $58.39 - 16.04 = \square$

3  $3.82 - 0.3 = \square$

11  $40.13 - 7.99 = \square$

4  $12.3 - 9.7 = \square$

12  $22.3 - 18.8 = \square$

5  $54.72 - 8.99 = \square$

13  $11.27 - 4.99 = \square$

6  $3.4 - 2.8 = \square$

14  $85.66 - 30.3 = \square$

7  $18.27 - 3.99 = \square$

15  $64.4 - 58.8 = \square$

8  $14.89 - 1.03 = \square$



Which subtraction did you find easiest and why? Write one of each type of subtraction with a clue as to how to solve it.



I am confident with using mental strategies to complete subtractions.

## Multiplication using mental strategies

Write the first ten multiples of 6. Use doubling to write the first ten multiples of 12. Use doubling again to write the first ten multiples of 24.

Use your table facts to complete these multiplications.

1  $3 \times 24 = \square$

3  $9 \times 24 = \square$

5  $8 \times 24 = \square$

2  $7 \times 24 = \square$

4  $6 \times 24 = \square$

6  $4 \times 24 = \square$

These facts have been obtained by doubling.

$1 \times 13 = 13$

$1 \times 16 = 16$

$1 \times 15 = 15$

$2 \times 13 = 26$

$2 \times 16 = 32$

$2 \times 15 = 30$

$4 \times 13 = 52$

$4 \times 16 = 64$

$4 \times 15 = 60$

$8 \times 13 = 104$

$8 \times 16 = 128$

$8 \times 15 = 120$

$16 \times 13 = 208$

$16 \times 16 = 256$

$16 \times 15 = 240$

Use the facts above to complete these multiplications.

7  $3 \times 13 = \square$

12  $21 \times 16 = \square$

17  $17 \times 13 = \square$

22  $24 \times 13 = \square$

8  $12 \times 16 = \square$

13  $11 \times 13 = \square$

18  $17 \times 17 = \square$

23  $18 \times 13 = \square$

9  $5 \times 13 = \square$

14  $5 \times 15 = \square$

19  $13 \times 13 = \square$

24  $13 \times 15 = \square$

10  $3 \times 15 = \square$

15  $11 \times 16 = \square$

20  $6 \times 15 = \square$

25  $31 \times 13 = \square$

11  $7 \times 13 = \square$

16  $17 \times 15 = \square$

21  $16 \times 25 = \square$

26  $11 \times 15 = \square$



Use doubling to create a table for  $\times 17$  facts. Use it to write at least five other really hard  $\times 17$  facts!

- I am confident with solving multiplications using mental strategies.
- 
-

## Short multiplication and the grid method

These children used number cards to create a multiplication. They tried to get an answer close to 10 000. Predict the two nearest answers, then complete each child's multiplication to find out who was nearest, next nearest, and so on ...

<p>Estimate is 9 000</p> <p>Abi</p> $\begin{array}{r} 9000 \\ 4537 \\ \times \quad 2 \\ \hline 9074 \end{array}$ <p>2   4   5   3   7</p>	<p>3</p> <p>Chuy</p> <p>6   1   7   4   8</p>	<p>6</p> <p>Davinder</p> <p>7   1   3   6   2</p>
<p>1</p> <p>Caitlin</p> <p>4   3   6   7   9</p>	<p>4</p> <p>Sameer</p> <p>8   1   4   3   5</p>	<p>7</p> <p>Gordon</p> <p>4   2   6   3   8</p>
<p>2</p> <p>Naima</p> <p>4   2   5   3   1</p>	<p>5</p> <p>Kerry</p> <p>5   1   8   9   7</p>	<p>8</p> <p>Tom</p> <p>8   1   2   3   4</p>

Arrange the digits to create these multiplications.

<p>1 8 5 6</p>	<p>4 2 3 8</p>	<p>5 7 6 9</p>	<p>2 8 7 5</p>
<p>10</p> $\begin{array}{r} \square \square \square \square \\ \times \quad \quad \quad 4 \\ \hline 6 \ 2 \ 7 \ 2 \end{array}$	<p>11</p> $\begin{array}{r} \square \square \square \square \\ \times \quad \quad \quad 3 \\ \hline 1 \ 0 \ 2 \ 8 \ 4 \end{array}$	<p>12</p> $\begin{array}{r} \square \square \square \square \\ \times \quad \quad \quad 6 \\ \hline 3 \ 5 \ 8 \ 5 \ 6 \end{array}$	<p>13</p> $\begin{array}{r} \square \square \square \square \\ \times \quad \quad \quad 5 \\ \hline 2 \ 8 \ 6 \ 4 \ 0 \end{array}$

**THINK**

Can you create a multiplication like this,  $\square \times \square \square \square \square$ , so that the digits in the answer are in ascending or descending order, e.g. 1369 or 9421? The multiplier cannot be 1!

● I am confident with using short multiplication.

**Solve these problems using the method shown.**

- 1 How much for six packs of sausages that cost £5.79 each?

$$6 \times £5.79 = \begin{array}{|c|c|c|c|} \hline \times & £5 & 70\text{p} & 9\text{p} \\ \hline 6 & £30 & £4.20 & 54\text{p} \\ \hline \end{array} = \square$$

- 2 How much for four packs of onions that cost £3.68 each?

$$4 \times £3.68 = \begin{array}{|c|c|c|c|} \hline \times & & & \\ \hline & & & \\ \hline \end{array} = \square$$

- 3 How much for three packs of burgers that cost £4.57 each?  
 4 How much for six packs of veggie bites that cost £2.69 each?  
 5 How much for five packs of rolls that cost £1.93 each?  
 6 How much for four packs of potatoes that cost £2.88 each?

**Solve these word problems using the same method.**

- 7 How much change from £20 will James get if he buys six packs of potatoes that cost £2.88 each?  
 8 Kim buys five packs of veggie bites for £2.69 each. How much change from £20 will she get?  
 9 Mrs Richardson is having a bonfire party. She buys eight boxes of fireworks for £5.75 each. How much change from £50 will she get?



**I am confident with using grid multiplication.**

**Look at this table of firework prices. Work out the total cost using short multiplication.**

1

Price per box	Number of boxes needed	Total cost
£21.13	4	
£17.23	3	
£18.61	5	
£14.87	3	
£29.95	9	
£39.84	4	

**Answer these word problems.**

- 2 Three boxes of burgers cost £12.45 each. Find the change from £50.

- 3 You buy two large bags of potatoes at £11.79 each and three packs of bread rolls at £13.35 each. How much do you spend altogether?



- 4 Rockets cost £13.69 for a box of six or £40.99 for a box of 18. Is it better value to buy three of the boxes of six or the box of 18? How much would you save buying the cheaper option rather than the more expensive option?
- 5 Mr Collins is organising a large bonfire party and has £73.26 to buy giant sparklers for all the children. Packs of giant sparklers cost £11.38 for eight. If he buys 48 giant sparklers, how much money will he have left afterwards?

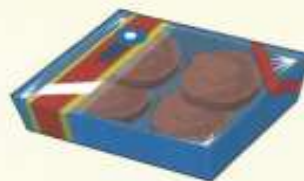
**I am confident with using short multiplication.**

Look at this table of firework prices. Work out the total cost using short multiplication.

1	Price per box	Number of boxes needed	Total cost
	£22.79	6	
	£37.88	7	
	£18.61	8	
	£14.87	7	
	£49.74	9	
	£57.86	8	

Answer these word problems.

- For a large bonfire party Mr Franks buys five large bags of potatoes at £11.79 each and six rolls of tin-foil at £3.86 each. How much did he pay altogether?
- Six boxes of burgers cost £12.45 each. Find the change from £100.
- Chloe buys seven packs of premium burgers that cost £13.78 each and the shop gives her an £8 discount. She pays with £100 in cash. How much change is she given?
- Jamie's shopping receipt shows that he has bought four items costing £11.67 each, five items costing £5.79 each and six items costing £3.73. How much change from £100 did he receive? How much change is she given?



Is  $£43.60 \times 5$  more than  $£34.50 \times 6$ ?  
Decide, then check by multiplying both!



I am confident with using short multiplication.

## Long multiplication and the grid method

Solve these multiplications.

1  $324 \times 14 = \square$

$\times$	300	20	4
10	3000	200	40
4	1200	80	16

2  $513 \times 12 = \square$

$\times$	500	10	3
10			
2			

3  $625 \times 13 = \square$

$\times$	600	20	5
10			
3			

4  $242 \times 14 = \square$

5  $146 \times 12 = \square$

6  $453 \times 13 = \square$



**THINK**

$345 \times 1\square = 4830$ . What is the missing digit?

 I am confident with using grid multiplication.

Estimate first and then solve these multiplications using long multiplication.



$$\begin{array}{r}
 348 \\
 \times 16 \\
 \hline
 2088 \\
 3480 \\
 \hline
 5568
 \end{array}$$

1  $573 \times 15 = \square$

2  $246 \times 14 = \square$

3  $437 \times 18 = \square$

4  $825 \times 19 = \square$

5  $1546 \times 13 = \square$

6  $7846 \times 16 = \square$

7  $5206 \times 12 = \square$

8  $8564 \times 17 = \square$

Estimate first to help you know if your answer is reasonable.



Is  $345 \times 16$  going to have a larger answer than  $346 \times 15$ ? Write your estimate first, then work it out.

I am confident with using long multiplication.

# Negative numbers

**GRAB!**

Number line resource sheet with negative and positive numbers

**Find the difference between each pair of temperatures.**

- |                                                  |                                                  |
|--------------------------------------------------|--------------------------------------------------|
| 1 $-3^{\circ}\text{C}$ and $4^{\circ}\text{C}$   | 4 $-11^{\circ}\text{C}$ and $-7^{\circ}\text{C}$ |
| 2 $-15^{\circ}\text{C}$ and $-9^{\circ}\text{C}$ | 5 $-4^{\circ}\text{C}$ and $9^{\circ}\text{C}$   |
| 3 $-5^{\circ}\text{C}$ and $6^{\circ}\text{C}$   | 6 $-12^{\circ}\text{C}$ and $-3^{\circ}\text{C}$ |

**Write these numbers in order from the lowest to the greatest.**

- |                    |                     |
|--------------------|---------------------|
| 7 $5.7, -3.8, -12$ | 10 $-0.7, 0.8, -1$  |
| 8 $-6.3, -9, 2.1$  | 11 $3.4, -16, -9.9$ |
| 9 $-1.8, 7, -6.4$  | 12 $7.9, -8, -7.8$  |

**Answer these word problems.**

- 13 The temperature in Moscow was  $4^{\circ}\text{C}$ .  
The temperature dropped by  $9^{\circ}\text{C}$  overnight.  
What was the lowest temperature overnight?
- 14 The temperature in London was  $-3^{\circ}\text{C}$ .  
The temperature rose by  $14^{\circ}\text{C}$  by midday.  
What was the temperature at midday?



**THINK**

The difference between a positive and a negative number is 5. What pairs of numbers could they be?



**I am confident with reading and ordering negative numbers.**

Find the difference between each pair of temperatures.

- |                                                  |                                                   |
|--------------------------------------------------|---------------------------------------------------|
| 1 $-5^{\circ}\text{C}$ and $-12^{\circ}\text{C}$ | 4 $-7^{\circ}\text{C}$ and $-22^{\circ}\text{C}$  |
| 2 $7^{\circ}\text{C}$ and $-14^{\circ}\text{C}$  | 5 $16^{\circ}\text{C}$ and $-9^{\circ}\text{C}$   |
| 3 $-8^{\circ}\text{C}$ and $13^{\circ}\text{C}$  | 6 $-12^{\circ}\text{C}$ and $-31^{\circ}\text{C}$ |

Write these numbers in order from the lowest to the greatest.

- |                                         |                                        |
|-----------------------------------------|----------------------------------------|
| 7 $-4.82$ , $3.25$ , $5.12$ , $-7.26$   | 10 $2.02$ , $-2.22$ , $2.20$ , $-2$    |
| 8 $-3.62$ , $-9.32$ , $10.44$ , $-5.76$ | 11 $-5.5$ , $5.55$ , $5.5$ , $-5.55$   |
| 9 $6.71$ , $-6.71$ , $7.16$ , $-1.76$   | 12 $8.81$ , $-8.88$ , $-8.11$ , $8.01$ |

Answer these word problems.

- 13 The temperature at ground level in Helsinki is  $20^{\circ}\text{C}$  lower than in London. The temperature in a basement flat in Helsinki is  $5^{\circ}\text{C}$  below the temperature at ground level. If it is  $-29^{\circ}\text{C}$  in the basement, what is the temperature in London?
- 14 The temperature in Mrs Jones' fridge is  $3^{\circ}\text{C}$ . The temperature in her freezer is normally  $21^{\circ}\text{C}$  colder than in the fridge. Mrs Jones has unfortunately left her freezer door slightly open and the temperature in her freezer has risen by  $8^{\circ}\text{C}$ . What is its current temperature?



The difference between a positive and a negative number is 10. The digit value of the positive number is greater than the digit value of the negative number. What pairs of numbers could they be?

# Comparing fractions

**GRAB!** Fraction strips from a resource sheet.


Write  $<$  or  $>$  between each pair of fractions.

$\frac{3}{4} < \frac{7}{8}$  because  $\frac{3}{4} = \frac{6}{8}$

Remember to make both fractions have the same larger denominator – find the equivalent fraction for the fraction with the smaller denominator.

1  $\frac{3}{8} \square \frac{1}{4}$

7  $\frac{4}{5} \square \frac{9}{10}$

2  $\frac{7}{12} \square \frac{3}{4}$

8  $\frac{5}{9} \square \frac{2}{3}$

3  $\frac{5}{6} \square \frac{2}{3}$

9  $\frac{3}{10} \square \frac{2}{5}$

4  $\frac{3}{4} \square \frac{5}{8}$

10  $\frac{7}{8} \square \frac{3}{4}$

5  $\frac{1}{3} \square \frac{4}{9}$

11  $\frac{7}{10} \square \frac{67}{100}$

6  $\frac{1}{2} \square \frac{3}{5}$

12  $\frac{5}{6} \square \frac{11}{12}$

13  $\frac{8}{10} \square \frac{71}{100}$

14  $\frac{39}{100} \square \frac{4}{10}$

15  $\frac{9}{10} \square \frac{19}{20}$



How many ways can you write  $\frac{2}{5}$ ? Find at least eight ways.



I am confident with comparing fractions.

Look at these pairs of fractions. Change them so they have the same denominator, then write  $<$  or  $>$  between them.


1  $\frac{1}{2} \square \frac{5}{8}$

2  $\frac{1}{4} \square \frac{3}{8}$

3  $\frac{1}{2} \square \frac{3}{8}$


4  $\frac{1}{3} \square \frac{2}{9}$

5  $\frac{5}{6} \square \frac{2}{3}$

6  $\frac{7}{9} \square \frac{2}{3}$


7  $\frac{3}{10} \square \frac{1}{2}$

8  $\frac{3}{5} \square \frac{7}{10}$

9  $\frac{7}{10} \square \frac{1}{2}$




How could we find out which is larger,  $\frac{3}{4}$  or  $\frac{2}{3}$ ?



I am confident with reading and comparing fractions.

## Fractions and mixed numbers

Convert these mixed numbers and simplify them where possible.


$$\frac{11}{14} + \frac{5}{14} = \frac{16}{14} = 1\frac{2}{14} = 1\frac{1}{7}$$

1  $\frac{5}{6} + \frac{5}{6} = \square$

6  $\frac{7}{9} + \frac{5}{9} + \frac{7}{9} = \square$

2  $\frac{5}{9} + \frac{7}{9} = \square$

7  $\frac{3}{8} + \frac{5}{8} + \frac{7}{8} = \square$

3  $\frac{5}{8} + \frac{7}{8} = \square$

8  $\frac{5}{12} + \frac{11}{12} + \frac{7}{12} = \square$

4  $\frac{3}{10} + \frac{9}{10} = \square$

9  $\frac{7}{15} + \frac{11}{15} + \frac{2}{15} = \square$

5  $\frac{7}{12} + \frac{11}{12} = \square$

10  $\frac{5}{10} + \frac{3}{10} + \frac{9}{10} = \square$



**THINK**

Hannah says that two fractions were added and the total was a mixed number greater than 2. Claire says this is not possible. Who is right?

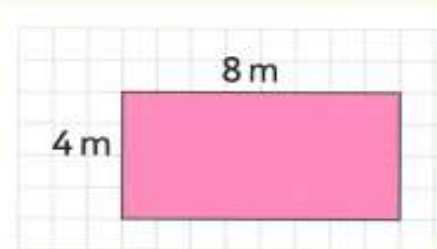


I am confident with converting and simplifying fractions.

## Area and perimeter

Calculate the area and perimeter for each shape.  
Give your answers in m and  $\text{m}^2$ .

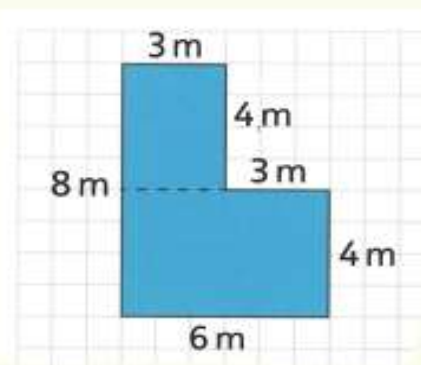
1



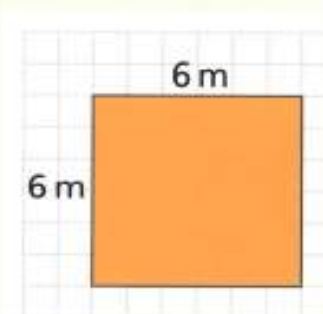
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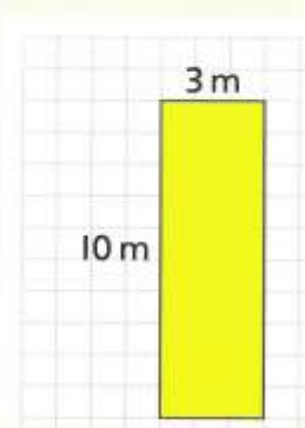
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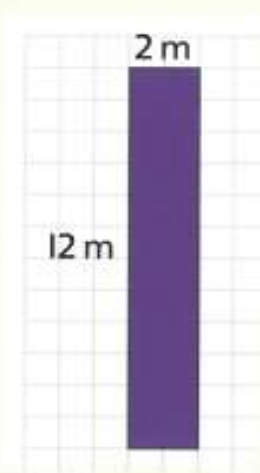
5



3



6



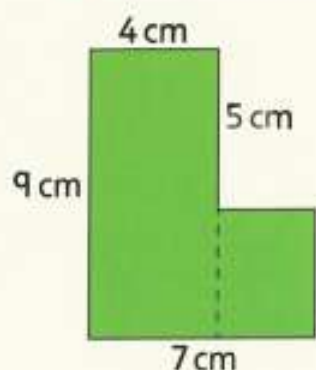
Two different rectangles both have an area of  $24 \text{ cm}^2$ .  
Will the perimeters be the same? How do you know?



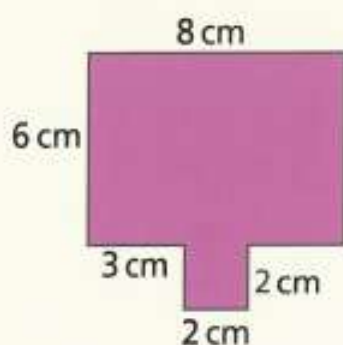
I am confident with working out the area and perimeter of shapes.

Calculate the area and perimeter for each shape.  
Give your answers in cm and  $\text{cm}^2$ .

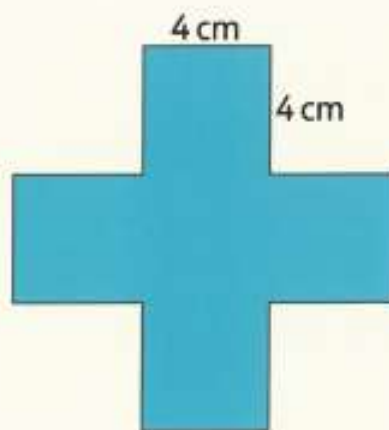
1



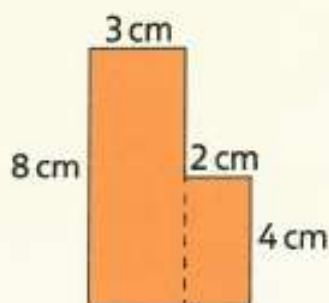
3



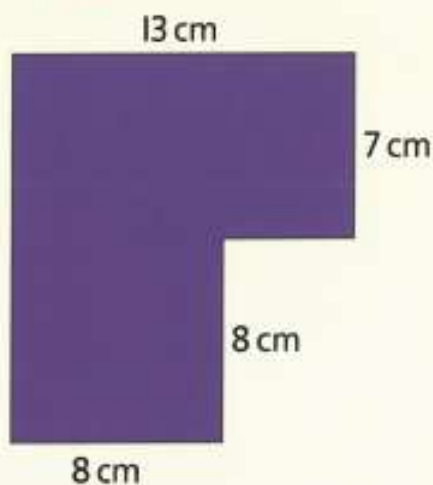
5



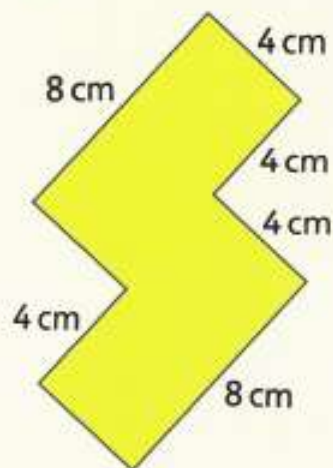
2



4



6



Two different L-shapes both have an area of  $22 \text{ cm}^2$ . They have different perimeters. Can you draw them?



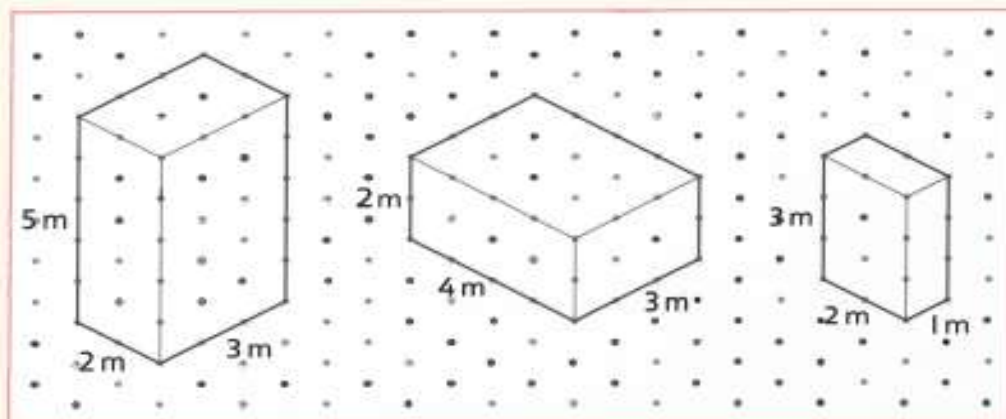
I am confident with working out the area and perimeter of shapes.

## Calculate the volume of each shape.

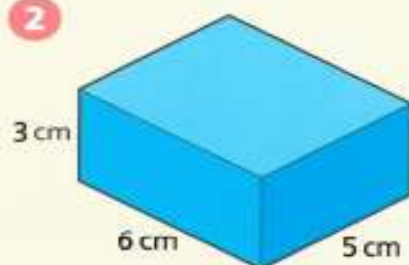
$$\text{Volume} = \text{length} \times \text{width} \times \text{height}$$
$$V = l \times w \times h$$

Remember to use  $\text{m}^3$  or  $\text{cm}^3$ .

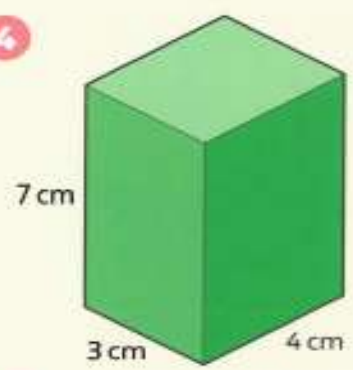
1



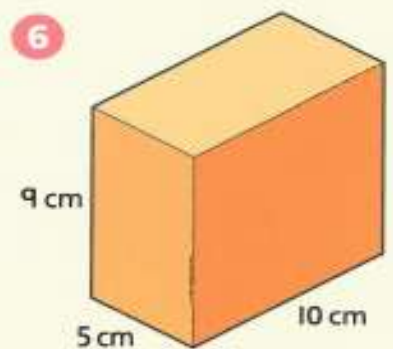
2



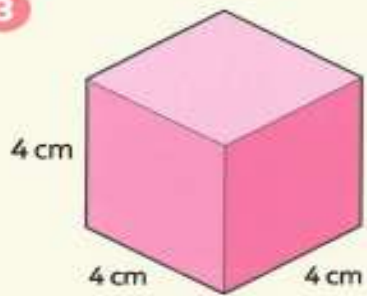
4



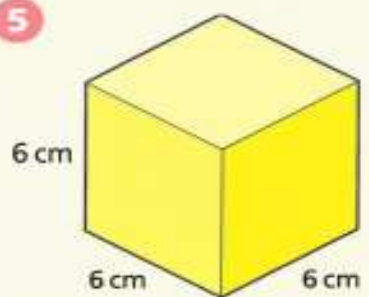
6



3



5



A square number is what you get when you multiply a number by itself, e.g. 4 ( $2 \times 2$ ) and 16 ( $4 \times 4$ ). What are cube numbers? Can you write the first three cube numbers?



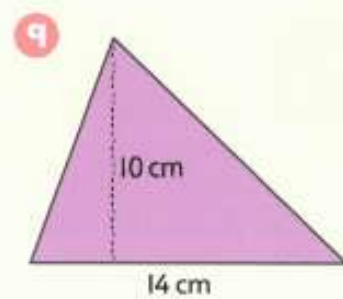
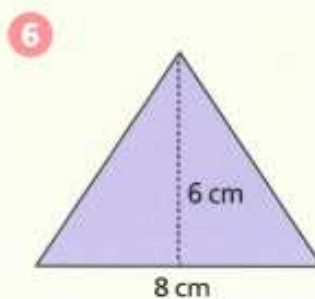
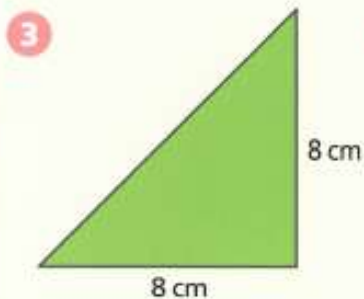
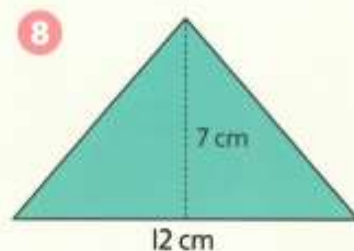
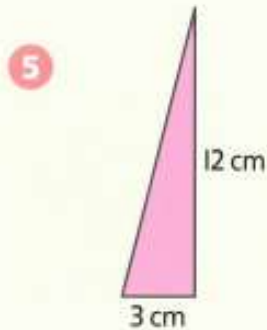
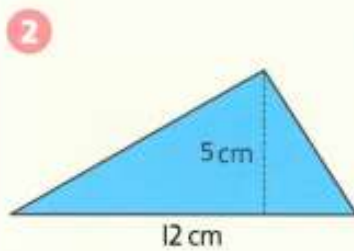
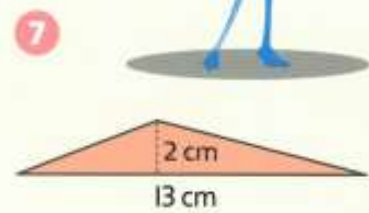
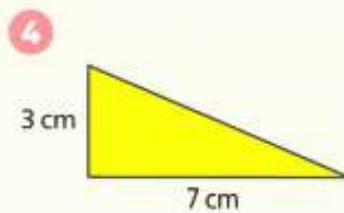
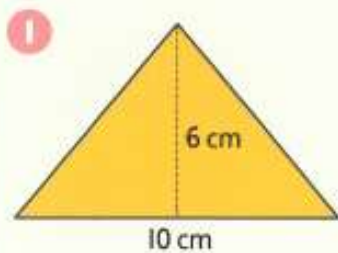
I am confident with working out the volume of shapes.

# Calculating area

Calculate the area of each triangle.

$$\text{Area} = \frac{1}{2} \text{ base} \times \text{height}$$
$$A = \frac{1}{2} b \times h$$

Remember to give your answers in  $\text{cm}^2$  or  $\text{m}^2$ .



A triangle has an area of  $24 \text{ cm}^2$ . If the height is 4 cm, what is its base?

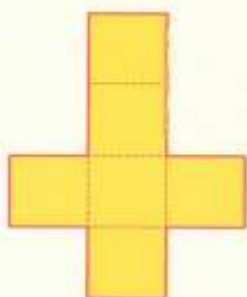


I am confident with working out the area of triangles.

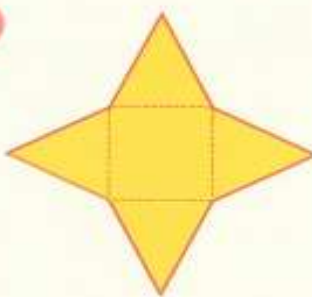
# Nets

Write the name of the shape made by each net.  
Do they all make closed 3d shapes?

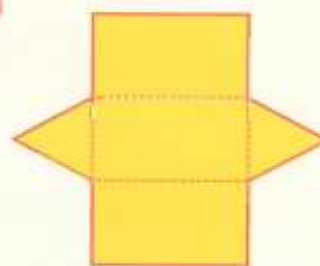
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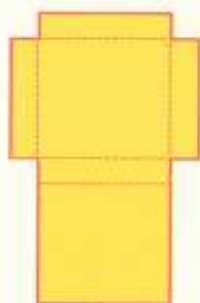
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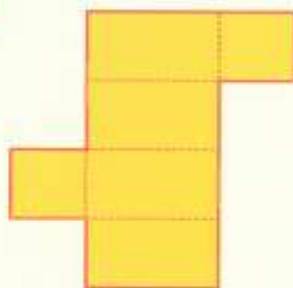
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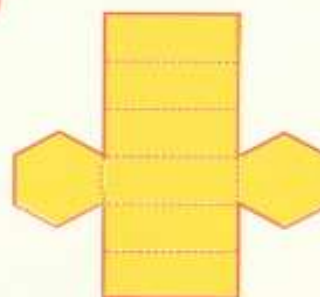
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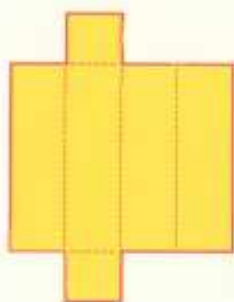
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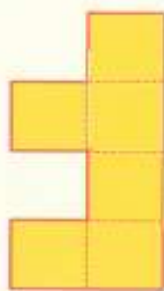
8



3



6



9

Draw a net for a tetrahedron.



Draw a net for a shape that is not possible.  
Explain why it does not work.



I am confident with drawing and interpreting nets.