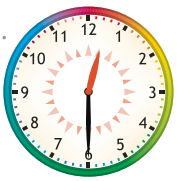
Exercise 1E

1. Write the time.

a. 

b. 

c. 

d. 

e. 

2. Fill in.

a. 10 hours = _____ minutes

b. 5 minutes = _____ seconds

c. 3 months = _____ days

d. 6 weeks = _____ days

e. 1 week = _____ hours

f. 4 days = _____ hours

g. 8 cm = _____ mm

h. 2400 mm = _____ cm

i. 15 m = _____ cm

j. 1000 cm = _____ m

k. 9000 m = _____ km

l. 7 km = _____ m

m. 8000 g = _____ kg

n. 2 kg = _____ g

o. 6000 mL = _____ L

p. 3 L = _____ mL

3. Change.

a. 3 days 17 hours to hours

b. 8 hours 15 minutes to minutes

c. 7 kg 777 g to g

d. 5065 g to kg and g

e. 1234 cm to m and cm

f. 10 m 6 cm to cm

g. 4 L 250 mL to mL

h. 2009 mL to L and mL

i. 5109 m to km and m

j. 6 km 78 m to m

4. Do these in your copy.

a. 58 m 15 cm + 42 m 75 cm

b. 405 kg 286 g + 30 kg 6 g + 19 kg 40 g

c. 576 km 237 m – 328 km 54 m

d. 800 L 673 mL – 567 L 8 mL

e. 530 L 87 mL × 2

f. 289 kg 274 g × 3

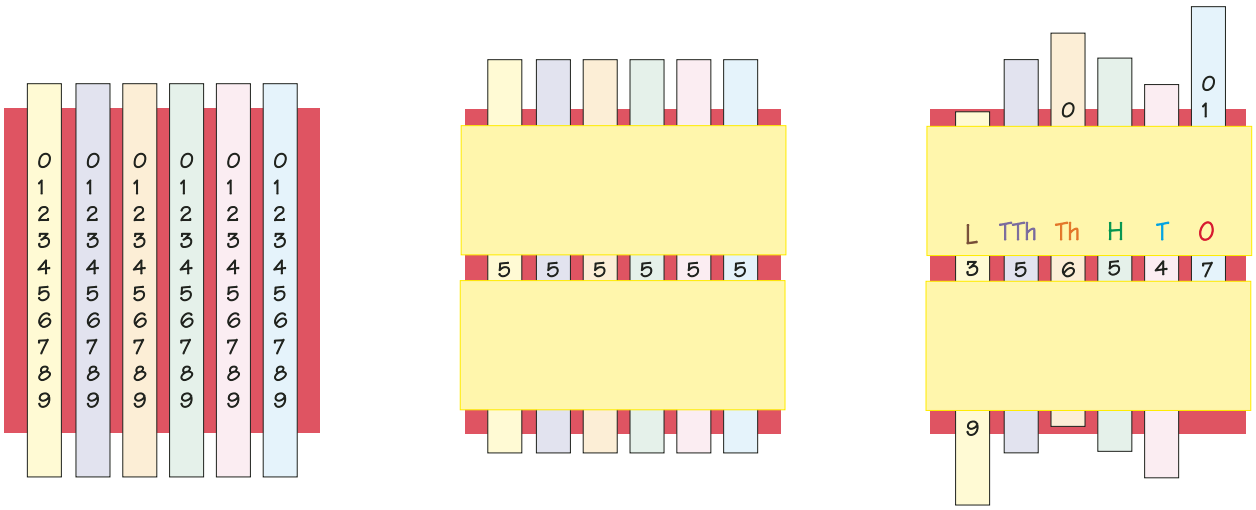
g. 679 m 91 cm ÷ 7

h. 801 L 936 mL ÷ 9

Activity Making and using a number slider

You will need: Two thick sheets of paper, some long strips of paper, glue or tape for fixing

Write the digits 0 to 9 on long strips of paper, as shown. Place the strips side by side on a sheet of paper. Tear or cut another sheet into two long, equal pieces. Lay these across the strips. Keep a small gap between them so that you see only one row of digits. Fold and fix the ends of the pieces to the back of the sheet. Write O, T, H, Th, TTh, and so on, as shown. These show the places of the digits in the gap or 'window'. Slide the strips to make different numbers in the window.



1. Play with your friend. One of you has to make a number on the number slider. The other has to say the number name. Take turns to make numbers.

2. Show the numbers formed on the number slider.

   a. 2000 + 200 + 2 b. 10000 + 5000 + 80 + 3 c. 300000 + 20000 + 800 + 50

   Now play with your friend. One of you has to ask the other to add 10, 100, 1000 or 10000 to each of these numbers. What new numbers do you get?

Neighbouring numbers

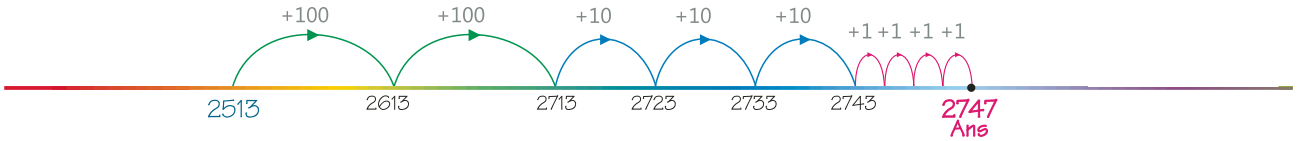
1. Write the neighbouring tens, hundreds, thousands and ten thousands of these numbers.

	Neighbouring 10s	Neighbouring 100s	Neighbouring 1000s	Neighbouring 10000s
a. **23457**	23450 23460	23400 23500	23000 24000	20000 30000
b. **51863**				
c. **74290**				
d. **11111**				

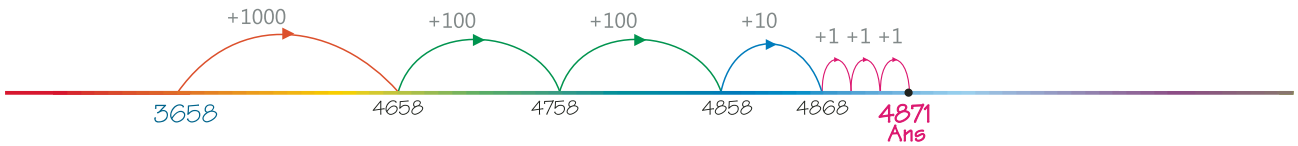
Adding on a number line

To add on a number line, we jump by 1000s, 100s, 10s or 1s.
The digits in the Th, H, T and O places tell how many such jumps to make. Here are some examples.

2513 + 234 234 has 2 hundreds, 3 tens and 4 ones.
To add 234: 2 jumps of hundred, 3 jumps of ten and 4 jumps of one to the right.

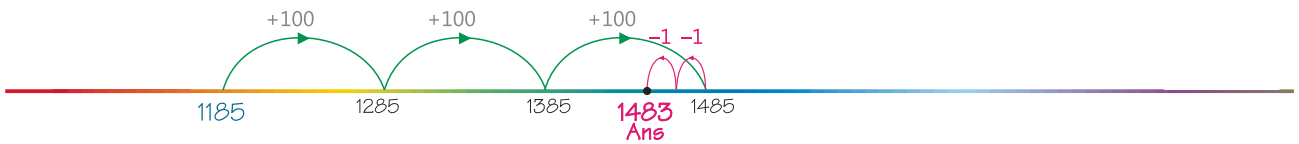


3658 + 1213 In 1213, Th = 1, H = 2, T = 1, O = 3.
To add 1213: Jump of 1 thousand, 2 hundreds, 1 ten, 3 ones.

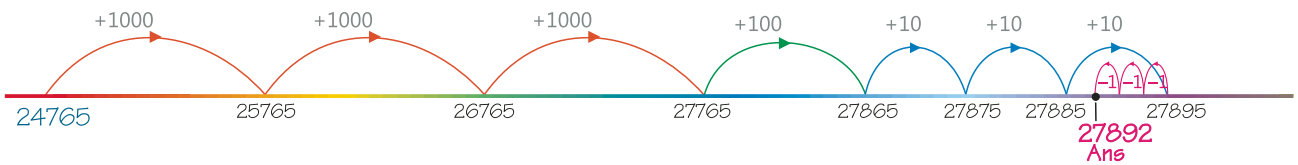


To take fewer jumps, jump to the nearest neighbour. Then adjust for the difference.

1185 + 298 Nearest neighbour of 298: 300 (3 jumps of 100). Adjust by: 300 – 298 = 2 (jump back).



24765 + 3127 Nearest neighbour of 3127: 3130. To add: 3 jumps of 1000, 1 jump of 100, 3 jumps of 10. Count back 3 to adjust (3130 – 3127 = 3).



1. Do these sums on the number lines below. a. 9,999 + 1,249 b. 40,853 + 2,497

a. _____

b. _____

2. Do these on open number lines: a. 38,590 + 1,508 b 1,16,483 + 4,317

Exercise 4G

1. There were 950 cars in a town. By the evening, 327 cars left and 184 new cars came in. How many cars were there in the town at night?

2. A mall has 5,840 T-shirts in sizes S, M and L. Out of these, 2,698 are of size S and 2,816 are of size M. How many L-sized T-shirts does the mall have?

3. A playlist had 2450 songs. Out of these, 1375 were old film songs and 280 were new film songs. The rest were folk songs. How many folk songs were there?

4. Asha had ₹18,500. She received ₹7,250. She bought gifts for ₹9,800 and ₹1,450. How much money remained with Asha?

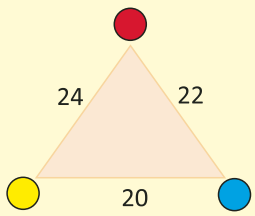
5. In a game, Ravi had to reach a castle. He started with 25,500 points. He spent 12,750 points to jump a level and lost 10,250 at a wall. He then won 10,530 points before reaching the castle. How many points did he have when he reached the castle?

6. A metro had 42,350 riders on Monday and 38,275 on Tuesday. On Wednesday, the number of riders was 9,480 less than on Tuesday. How many riders were there on these three days?

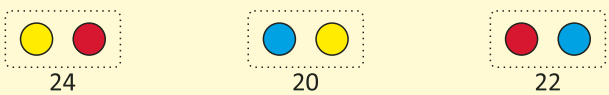
7. What number is 64,283 more than the difference of 71,956 and 49,268?

rocket maths

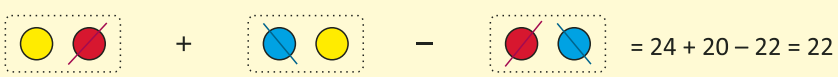
The triangle has numbers at the corners shown as the coins 🔴, 🟡 and 🔵.
The number on each side is the sum of its pair of corner numbers. Find the corner numbers.



We can show the sum on each side as:

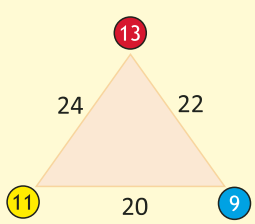


Each side sum counts the two corner coins of that side.
If we add the sides touching at yellow, the side sums (24 and 20) count red, blue and 2 yellows.
To remove the red and blue, we subtract the side sum (22) that has red and blue.



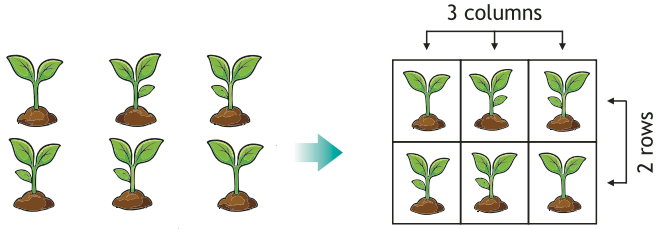
🟡 + 🟡 = 22. As 2 yellows equal 22, one yellow is half of that.

🟡 = 11. So: 🔵 = 20 – 11 = 9 🔴 = 24 – 11 = 13



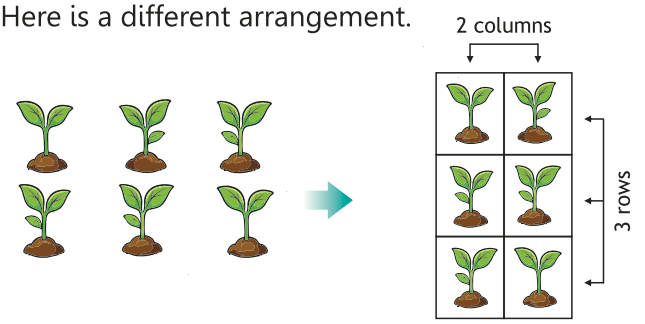
Multiplying using arrays

We can multiply numbers by arranging them in arrays. An array is an arrangement of items in rows and columns. In array multiplication, one factor is the number of rows. The other factor is the number of columns.
Here is an array.



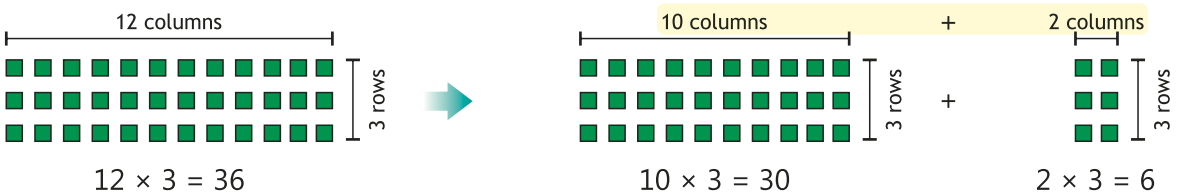
Number of plants
= number of rows × number of columns
= 2 × 3 = 6.

Here is a different arrangement.



Number of plants
= number of rows × number of columns
= 3 × 2 = 6.

Thus, rows × columns and columns × rows give the same product.
Now, let us count the number of squares in the array below.



12 × 3 = 36

10 × 3 = 30 2 × 3 = 6

Total number of squares = 30 + 6 = 36.

We can show this as:

×	10	+	2	= 12
3	3 × 10 = 30	+	3 × 2 = 6	= 36

```
   3
× 1 2
-----
   6
+ 3 0
.....
 3 6
```

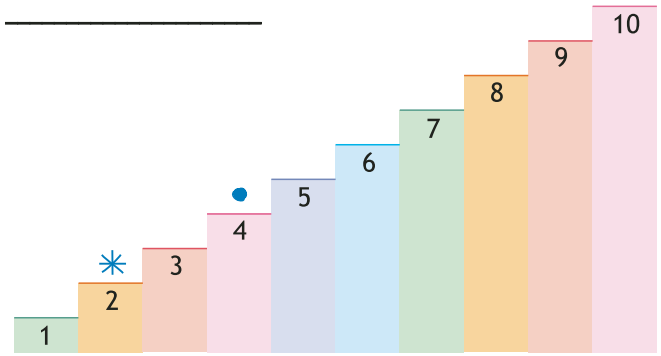
For large numbers, break the factors into 100s, 10s and 1s and add the products.
See the examples.

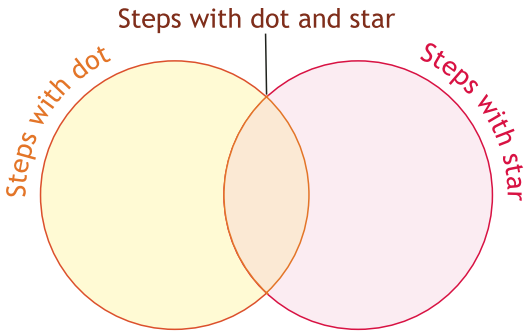
12 × 25

12 × 25
= 10 + 2 × 20 + 5 = 10 × 20 + 5 + 2 × 20 + 5
= 10 × 20 + 10 × 5 + 2 × 20 + 2 × 5.

×	10	2	
20	200	40	= 240
5	50	10	= 60
		+	= 300

7. These steps are numbered 1 to 10. Draw a star on every 2nd step and a dot on every 4th step. Which steps have both a dot and a star? Also show using the circles.



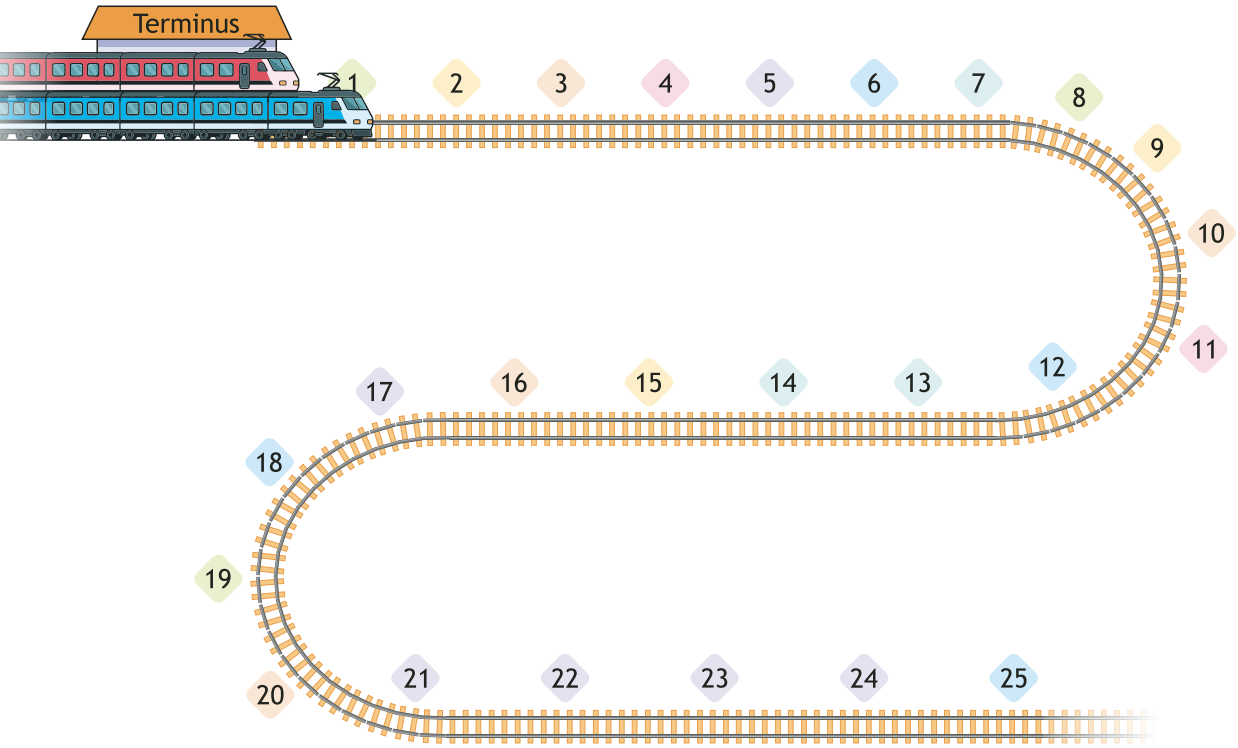


8. The red train stops at every 2nd station. The blue train stops at every 3rd station. Raj will go by the red train from the terminus to Station 20. Joe will go by the blue train from Station 9 to Station 21. They want to meet somewhere on the way.

a. The first station where they can meet is _____.

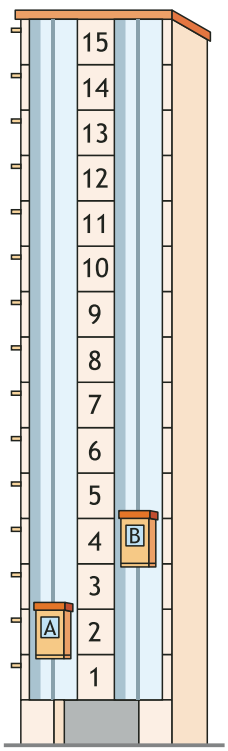
b. Otherwise, they can meet at _____.

c. If Joe boards at Station 3, they can first meet at _____.



9. A building has 15 floors with several lifts. Lift A starts from the 2nd floor and stops at every 3rd floor. Lift B starts from the 4th floor and stops at every 2nd floor. Naaz takes Lift A. Sonu takes Lift B. On which floor will they meet?

_____



6. Do these in your copy.

a. Avni got an order for 20 boxes of candles. Each of her boxes has 6 rows, with 5 candles in each row. How many candles will she make?

b. Raj has 75 fifty-rupee notes and 34 twenty-rupee coins. How much money does he have?

c. Sundar and his 35 classmates shared 14 pizzas. Each pizza had 6 slices. The children ate 2 slices each. How many slices were left? Can each of them get one more slice?

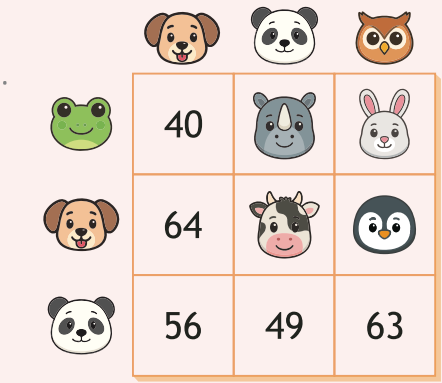
d. On a day, a bakery sold 164 loaves. 86 were fruit loaves sold for Rs 78 each, and the rest were plain loaves sold for Rs 70 each. How much did the bakery earn that day?

e. A factory packs 26 biscuit packets in each carton. The factory has enough packets for 450 cartons. 298 cartons are sent to shops and 1352 packets are distributed among the workers. How many biscuit packets are left?

rocket maths

1. Find the numbers shown by the pictures.

a.



b.

2. Think and tick the correct column.

	Always true	Sometimes true	Never true
a. The product of two numbers is greater than each of them.	○	○	○
b. If the product ends in 5, at least one number ends in 5.	○	○	○
c. Multiplying a number by 0 gives the same number.	○	○	○
d. The product of two 2-digit numbers is a 4-digit number.	○	○	○
e. Multiplying a number by 5 gives 5 in the ones place.	○	○	○

A game of 1s and 2s

In this game, a target number is set. Two players take turns to add 1 or 2 to the current total. They start at 0 and try to reach the target (say 10). Whoever reaches it first, wins. What should you do to win?

The sum of numbers in a round can be 2, 3 or 4. To win, say a number that keeps the round's sum to 3.
So, if your friend says 2, you say 1. And if your friend says 1, you say 2.
Let us call this rule Make3. Follow Make3 till 3 away from the target. Who starts first is also important.

- If the target is a multiple of 3, let your friend start. You make sure that a round's sum is 3 (Make3).
- If the target is not a multiple of 3, try to be the first to say a number.
  (a) If it is 1 more than a multiple of 3 (like 4, 7, 10...), start the game with 1. Then follow Make3.
  (b) If it is 2 more than a multiple of 3 (like 5, 8, 11, 17...), start the game with 2. Follow Make3.

More addition patterns

4. Here are some more addition patterns. Find each pattern and fill in the missing numbers.

a.
$0 + 1 = 1$ $\quad 2 \times 1 - 1$
$1 + 2 = 3$ $\quad 2 \times 2 - 1$
$2 + 3 = 5$ $\quad 2 \times 3 - 1$
$3 + 4 = \square$
$4 + \square = \square$
$9 + \square = \square$

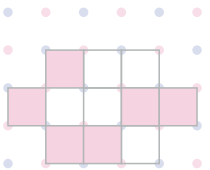
Odd Numbers

b.
$0 + 1 + 2 = 3$ $\quad 3 \times 1$ (middle number)
$1 + 2 + 3 = 6$ $\quad 3 \times 2$
$2 + 3 + 4 = 9$ $\quad 3 \times 3$
$3 + 4 + 5 = \square$
$4 + \square + \square = \square$
$30 + \square + \square = \square$

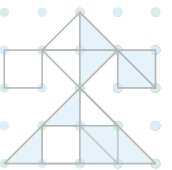
c.
$0 + 1 = 1$ $\quad$ last number = 1, $1 \times 2 \div 2 = 1$
$0 + 1 + 2 = 3$ $\quad$ last number = 2, $2 \times 3 \div 2 = 3$
$0 + 1 + 2 + 3 = 6$ $\quad$ last number = 3, $3 \times 4 \div 2 = 6$
$0 + 1 + 2 + 3 + 4 = \_\_\_\_$ $\quad$ last number = 4, $4 \times 5 \div 2 = 10$
$0 + 1 + 2 + 3 + 4 + 5 = \_\_\_\_$
$0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 = \_\_\_\_$
$0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = \_\_\_\_$

Fractions on a dot grid

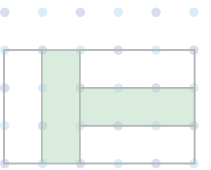
On a dot grid, we can make shapes by joining dots. A shape may have smaller, equal-sized parts like equal squares or triangles. We can shade some of the parts to show a fraction. Here are some examples.



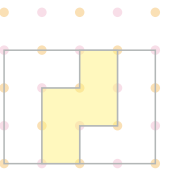
$\frac{6}{11}$



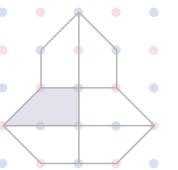
$\frac{9}{16}$



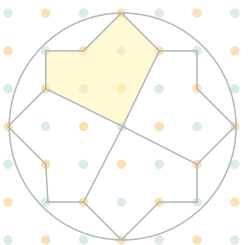
$\frac{2}{5}$



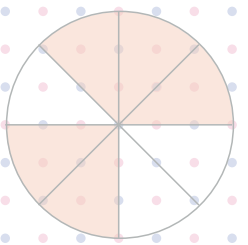
$\frac{1}{3}$



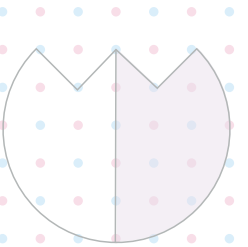
$\frac{1}{6}$



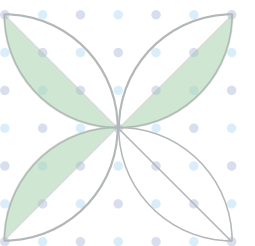
$\frac{1}{4}$



$\frac{5}{8}$

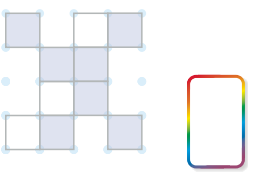


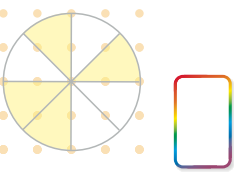
$\frac{1}{2}$

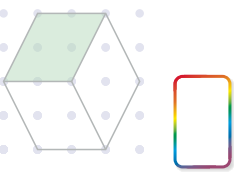


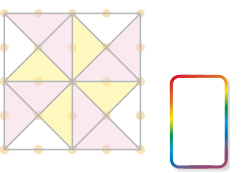
$\frac{3}{8}$

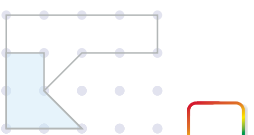
1. What fraction is shaded? Hint: Look at shaded squares or part squares.

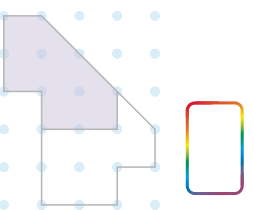
a. 

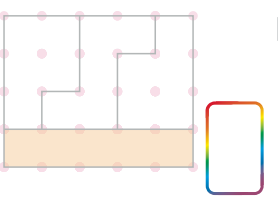
b. 

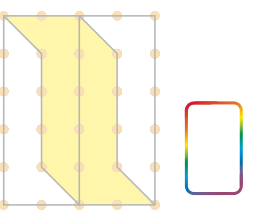
c. 

d. 

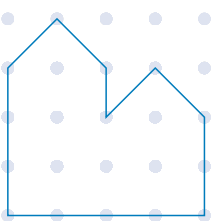
e. 

f. 

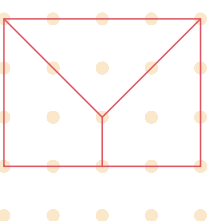
g. 

h. 

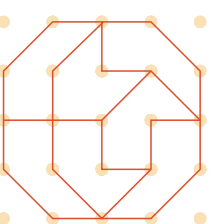
2. Colour to show the fraction. Hint: Count triangles.

a. 

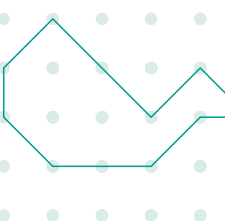
$\frac{3}{4}$

b. 

$\frac{2}{3}$

c. 

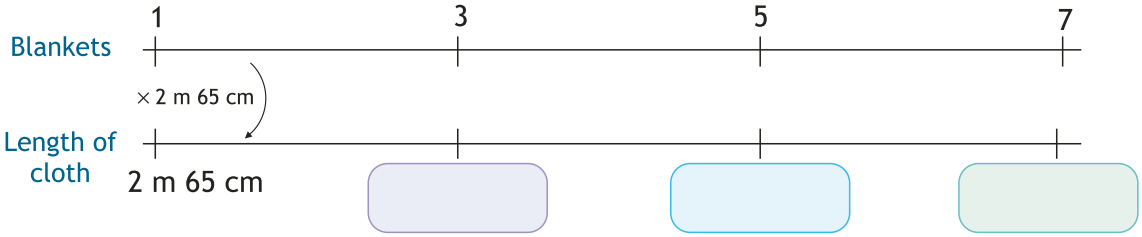
$\frac{5}{7}$

d. 

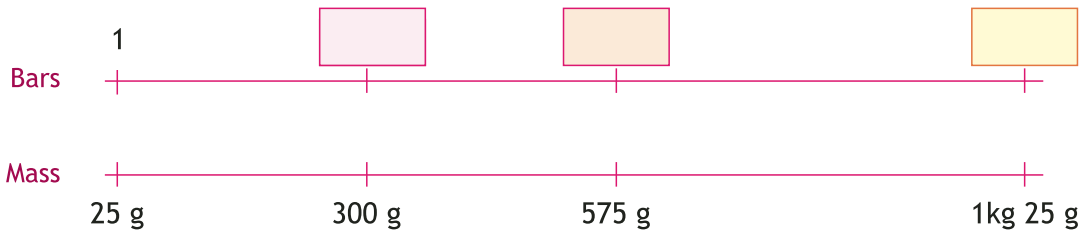
$\frac{1}{5}$

Do these sums. Fill the boxes on the double number lines.

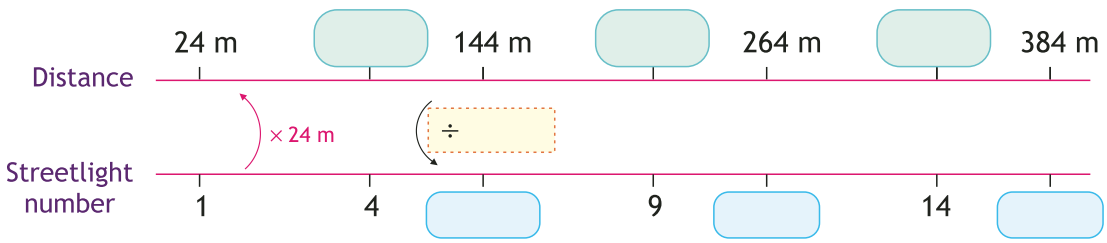
1. A blanket needs 2 m 65 cm of cloth. What lengths of cloth are needed for 3, 5 and 7 blankets?



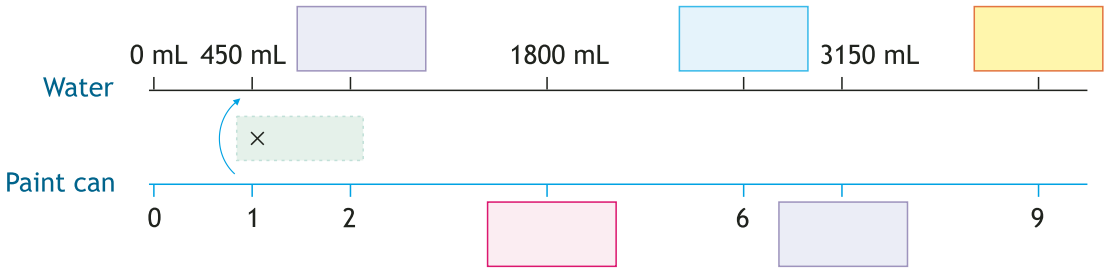
2. A small chocolate bar weighs 25 grams. Find the number of bars that weigh 300 g, 575 g and 1 kg 25 g.

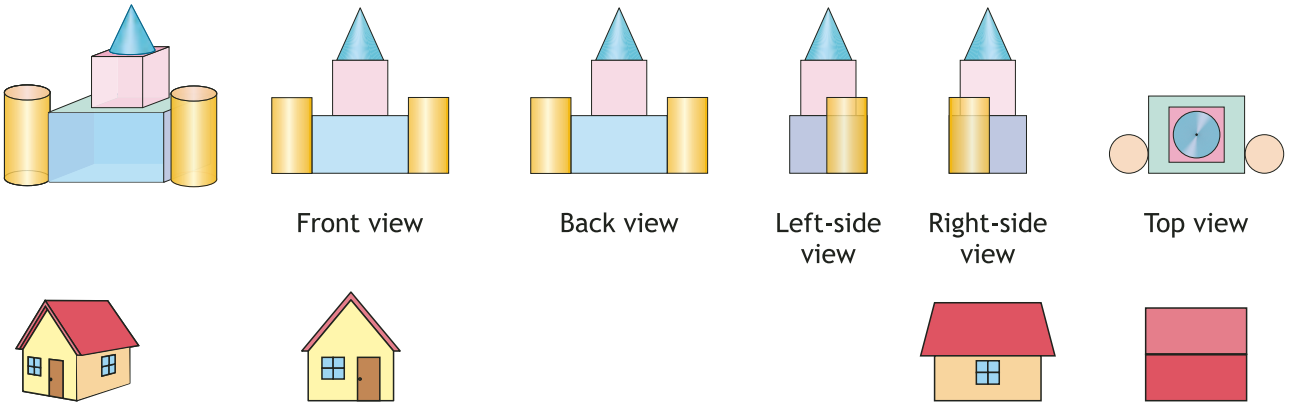


3. Streetlights are placed every 24 m on a road. They are numbered. Fill in the boxes below.



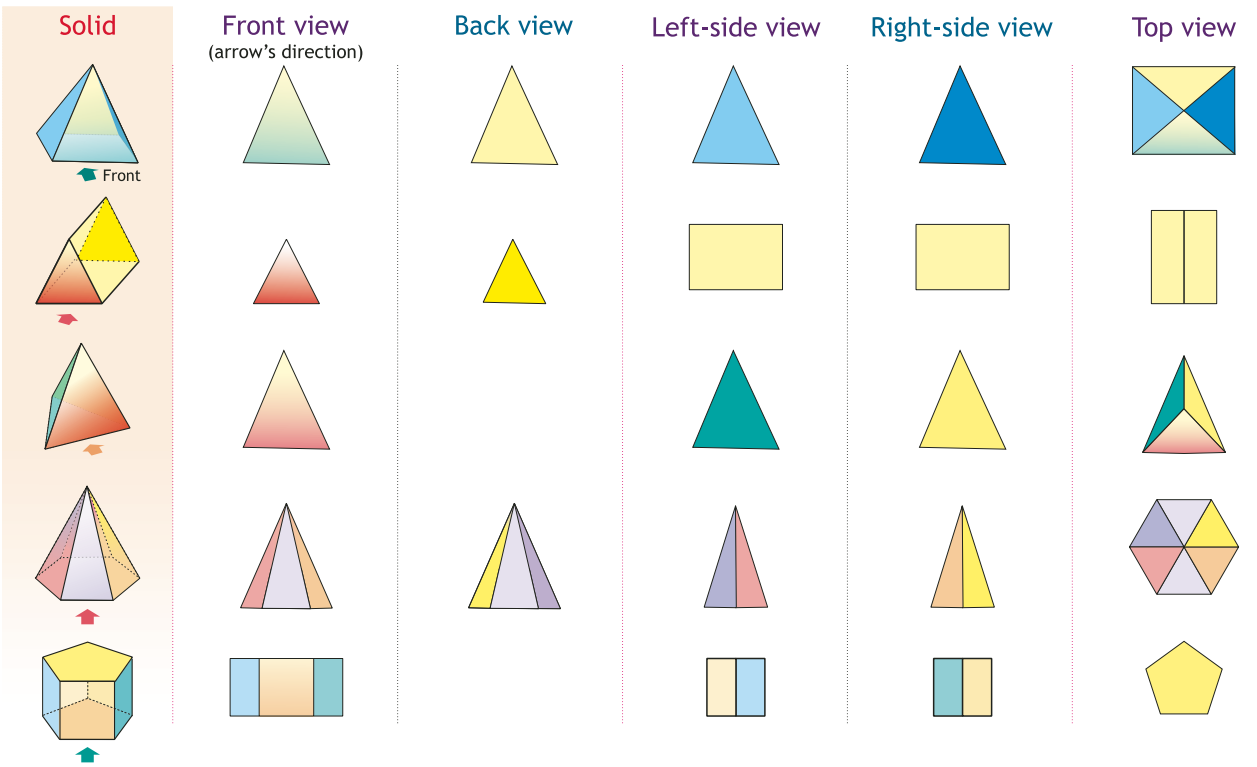
4. A painter adds 450 mL of water to every can of paint. Find the water needed for the cans of paint used. Also find the number of cans from the volume of water used.





Drawings of different views of a building lets builders know how it will look when built.

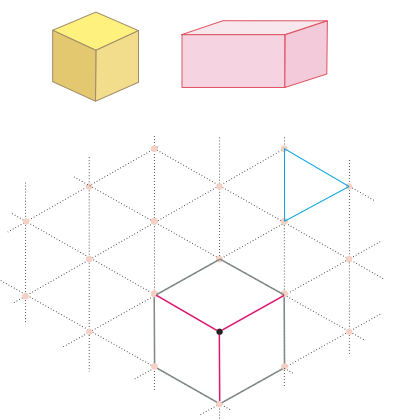
Different views of pyramids and prisms



Drawing 3D shapes from a corner view

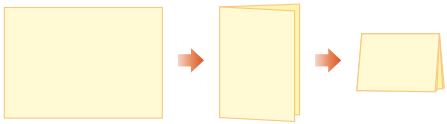
A **corner view** shows a solid shape when we see three faces that meet at a corner nearest to us.

We can use triangle dot paper to draw corner views of solids like cuboids. Its nearest dots make a triangle of equal sides. We start at one dot for a corner. We draw three line segments from this dot along the directions of a Y. These are three edges. Then we join more dots to complete the three faces we see in this view.

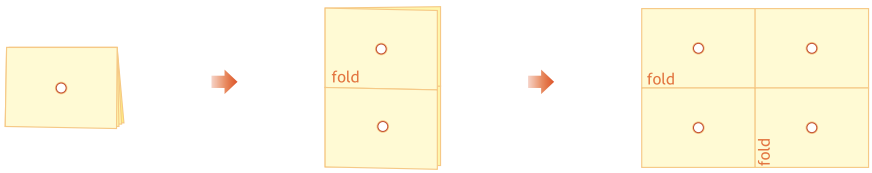


Making designs using symmetry, folding and cutting

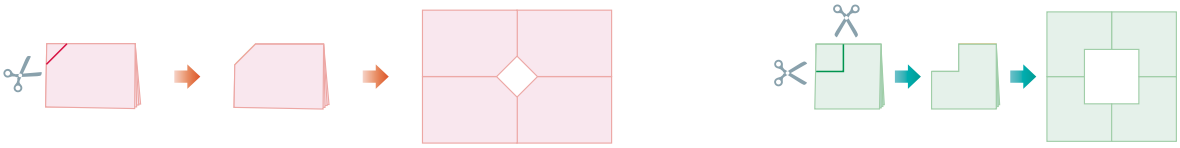
Fold a sheet of paper twice, as shown. Make a hole in the middle of the folded paper. Where will the hole be when you unfold the paper?



You will find that there is a hole on each side of every fold.

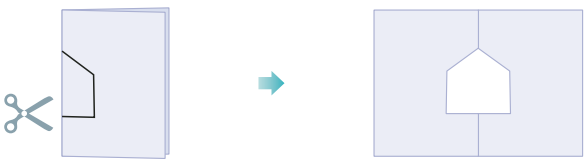


We may cut out shapes from the edges too. Shapes cut on the open edges stay at the edge of the paper after unfolding. Shapes cut on folded edges become holes inside the paper. Here are two ways to cut out a square at the middle of a sheet. One uses 1 cut, the other 2.



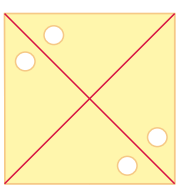
Fold a sheet of paper once. Draw a shape on the fold and cut it out. How many sides will the hole have after you unfold the paper?

When you open the paper, each cut appears on both sides.
The cut at right angles to the fold becomes 1 straight side. The slanting cut becomes 2 sides, one on each side of the fold. The cut away from the fold becomes 2 sides.



Cut along the folds and edges as shown below to create the design.

Draw the fold lines so that one hole makes all the holes.

a. 

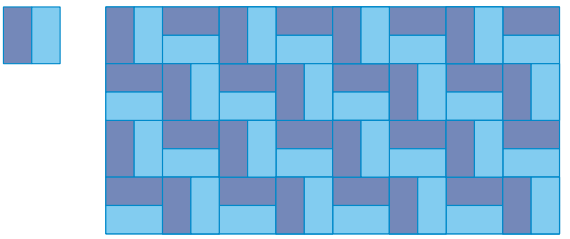
b.

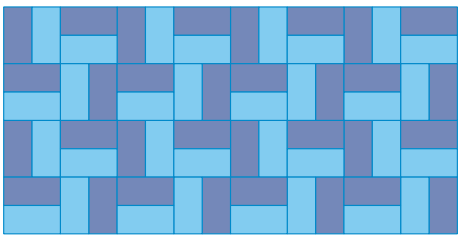
c.

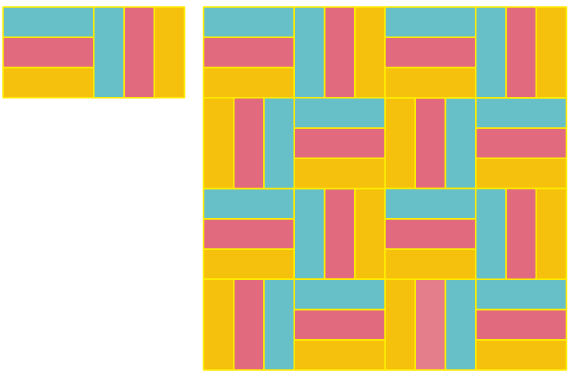
d.

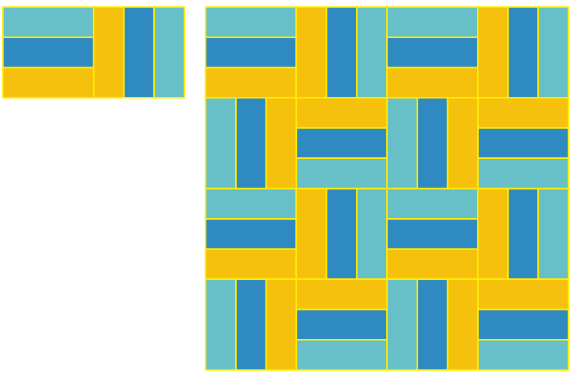
e.

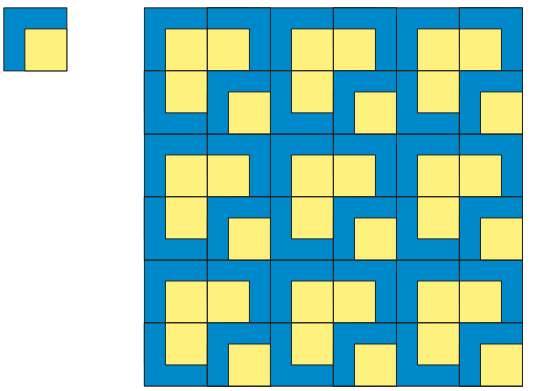
Here are some more patterns formed by putting together shapes in different ways. Can you find units that can form patterns without overlapping or leaving gaps?

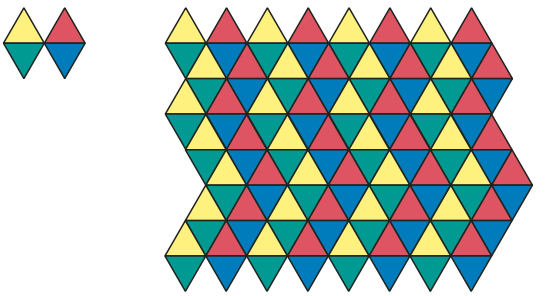


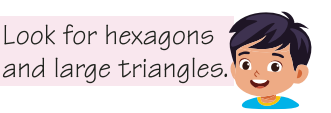




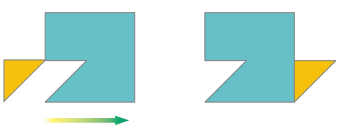




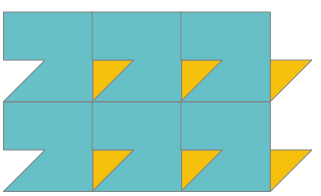




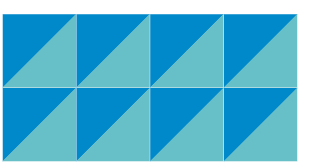
We can make tiling units by sliding, flipping or rotating shapes. These units make patterns.

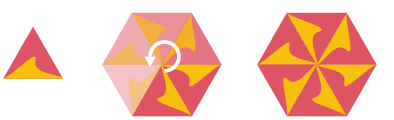


Sliding

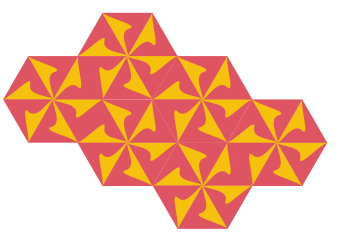


Flipping



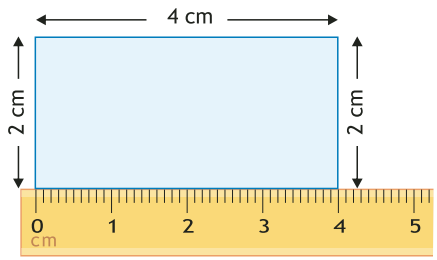


Rotating

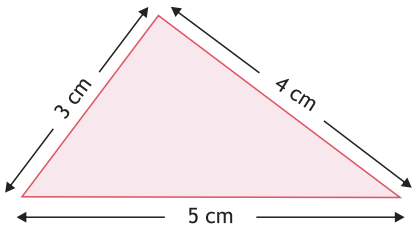


17. Perimeter and Area

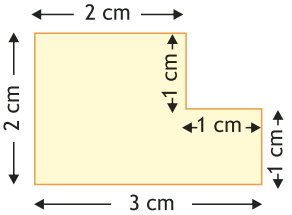
The perimeter of a shape is the total distance around it. So, the perimeter is the length of its boundary, or border. For sides with straight sides, we measure the length of each side and add them to find the perimeter.



Perimeter = 2 cm + 4 cm + 2 cm + 4 cm
= 12 cm.

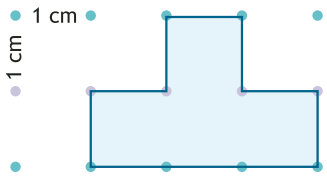


Perimeter = 3 cm + 4 cm + 5 cm
= 12 cm.



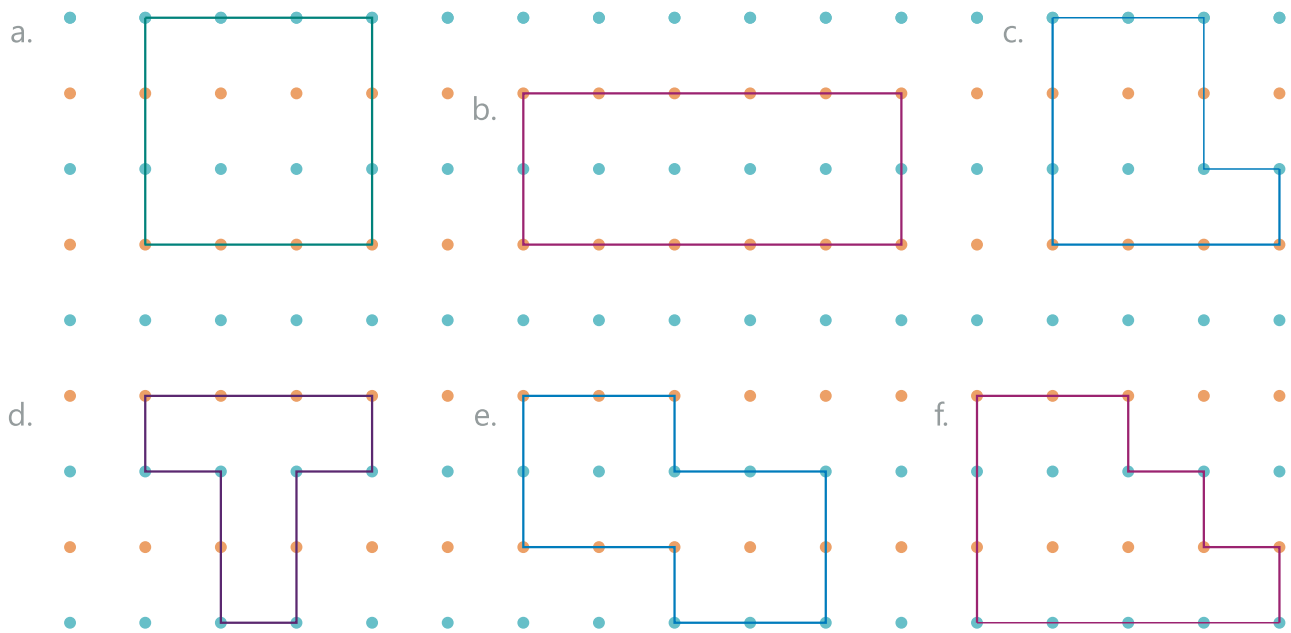
Perimeter
= 2 cm + 2 cm + 1 cm + 1 cm + 1 cm + 3 cm
= 10 cm.

On a dot grid, each dot is at a fixed distance from its nearest neighbours. To find the length of each side, count the gaps between the dots on that side. In this figure, the gap length is 1 cm. There are 10 gaps between the dots on the border. So the perimeter is 10 cm.



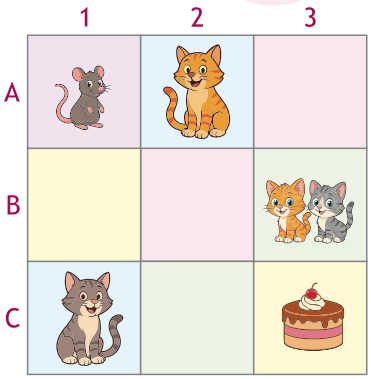
Exercise 17A

1. Find the perimeter of each shape on the dot grid. Each dot is 1 cm away from its nearest neighbours. Fill shapes of equal perimeter with the same colour.



Practise Again 5

1. Look at the grid and fill in.



a. The brown cat is in the cell A2. The grey cat is in _____.

b. 1 step right and 1 step down takes the _____ cat to the baby cats.

c. Which cat is closer to the cake—the brown or the grey?
the _____ cat

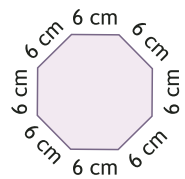
d. The codes ↑ → → ↑ take the grey cat to the cell _____.

e. Write in arrow codes how the rat can reach the cake without meeting any cats. _____

2. On the dot grid draw two other shapes with the same perimeter as the given shape.

3. Find the perimeter.

a.



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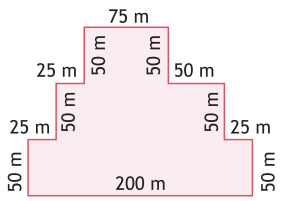
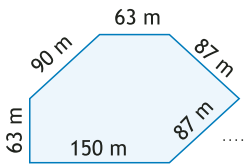
b.



.....

c.



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4. The pictograph shows drink packets sold by Sima and Lokesh on a day. Each packet stands for a quarter litre (250 mL).

a. _____ sold more lemonade than _____.
The difference was _____ mL.

b. _____ sold more drink than _____.
The difference was _____ mL.

c. The total amount of drink sold by Sima and Lokesh was _____ L _____ mL.

d. Together they sold more _____ than _____.
The difference was _____ mL.