

# 18. [Measuring]

## Skill 18.1 Estimating length.

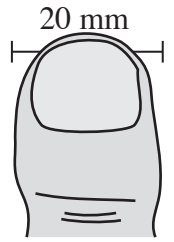
MM3.2 1 1 2 2 3 3 4 4  
MM4.1 1 1 2 2 3 3 4 4

EITHER

- Compare the length of the object to a known length.  
Example: The line segments shown.

OR

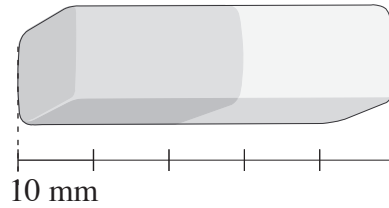
- Measure the length against an everyday object.  
Example: Your thumb.



**Q.** Estimate the length of the eraser.

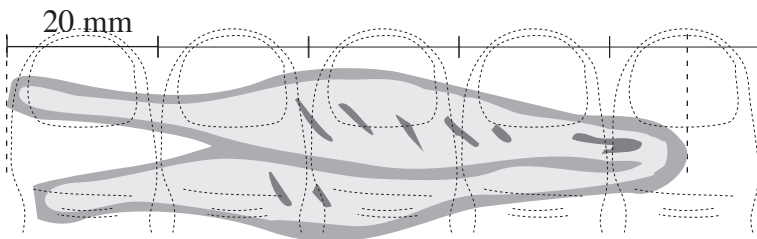


**A.** 50 mm



The eraser looks to be about five times the length of the 10 mm line. A reasonable estimate would be 50 mm.

**a)** Estimate the length of the tweezers.



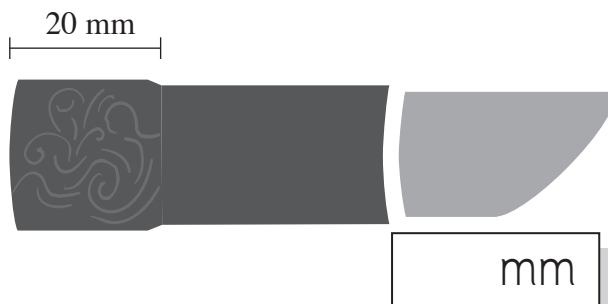
Accept 85 to 95 — 90 mm

**b)** Estimate the length of the postage stamp.



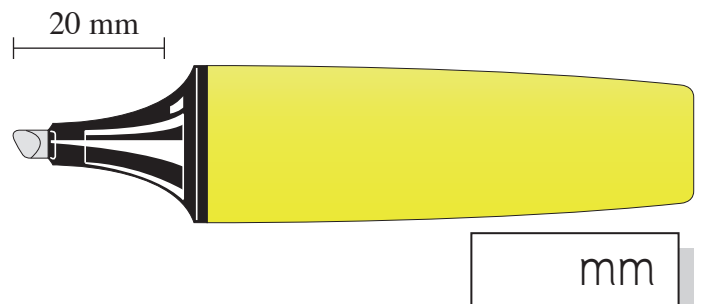
cm

**c)** Estimate the length of the lipstick.



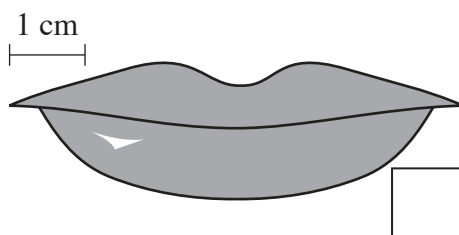
mm

**d)** Estimate the length of the hi-liter.



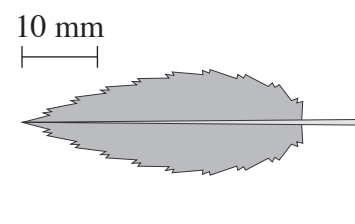
mm

**e)** Estimate the length of the lips.



cm

**f)** Estimate the length of the leaf.



mm

Determine the value of each mark and...

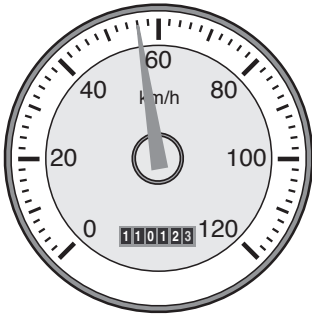
EITHER

- Start at zero and count by that amount, pointing to each mark as you go.

OR

- Count on from a known point.

Q. At what speed is the car travelling?



A. **56 km/h**

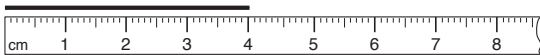
The darker calibrations mark every 20 km.

The arrow is between 40 and 60 but after 50 km.

The lighter calibrations mark every 2 km. The arrow is at 3 marks after 50. Counting 2, 4 to 6.

The car is travelling at 56 km/h.

a) Using the ruler measure the length of the line in centimetres.



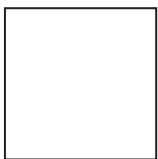
**4 cm**

b) Using the ruler measure the length of the line in centimetres.



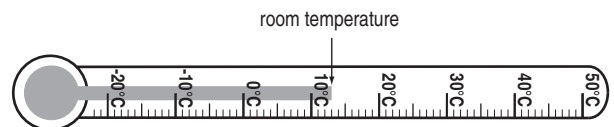
**3 cm**

c) Using a ruler measure the length of a side of the square in millimetres.



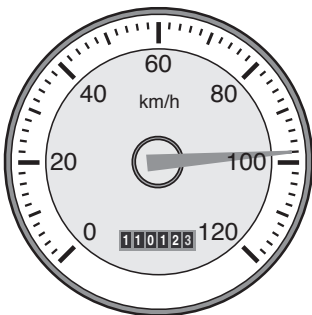
**30 mm**

d) According to the thermometer what is the temperature of the room?



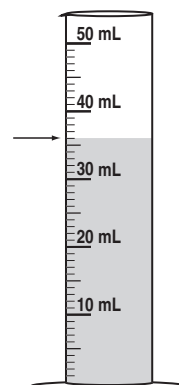
**10°C**

e) At what speed is the car travelling?



**100 km/h**

f) How much water is in the measuring cylinder?



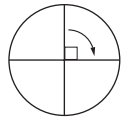
**35 mL**

**Skill 18.3** Comparing angles to a right angle.

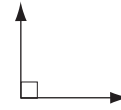
MM3.2 11 2 2 33 44  
MM4.1 11 22 33 44

- Match the point of the angle and a corner of a Maths Mate.
- Align one line of the angle with a side of the page. If the other line of the angle extends beyond the page, then the angle is greater than a right angle.

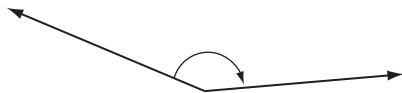
Example: Turning a quarter of the way around a circle is turning at right angles.



Hint: A right angle measures  $90^\circ$  (degrees). It is marked with a corner.



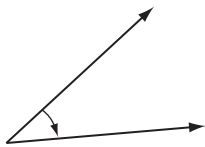
**Q.** Is the angle shown "less than", "equal to" or "greater than" a right angle?



**A.** *greater than*

The angle appears greater than  $90^\circ$ .  
Check by placing the corner of a Maths Mate inside the angle.

**a)** Is the angle "less than", "equal to" or "greater than" a right angle?

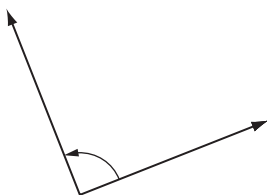


less than

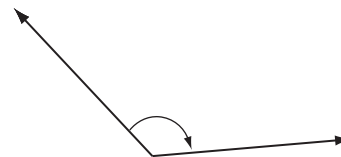
**b)** Is the angle "less than", "equal to" or "greater than" a right angle?



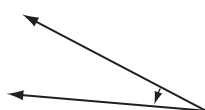

**c)** Is the angle "less than", "equal to" or "greater than" a right angle?



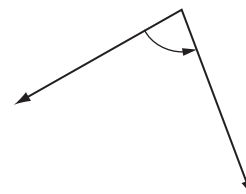

**d)** Is the angle "less than", "equal to" or "greater than" a right angle?




**e)** Is the angle "less than", "equal to" or "greater than" a right angle?




**f)** Is the angle "less than", "equal to" or "greater than" a right angle?



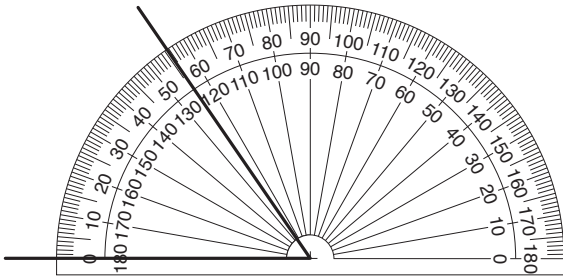
## Skill 18.4 Measuring angles using a protractor.

MM3.2 11 22 33 44  
MM4.1 11 22 33 44

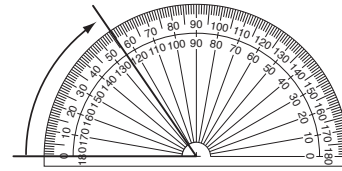
- Place the centre of the protractor at the corner (vertex) of the angle.
- Align one line of the angle with a zero line on the protractor.
- Take the reading from where the second line of the angle crosses the scale on the protractor.

**Hint:** Protractors can be read using either the inside or outside scale depending on which zero is used.

**Q.** Using the protractor measure the size of the angle shown.

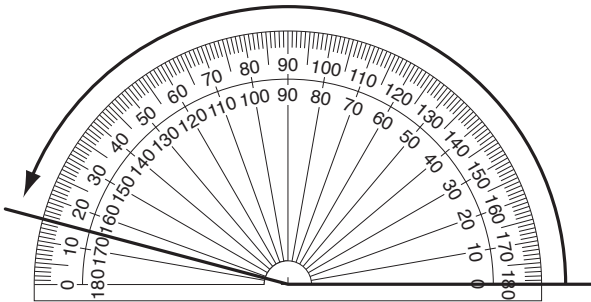


**A.**  $55^\circ$



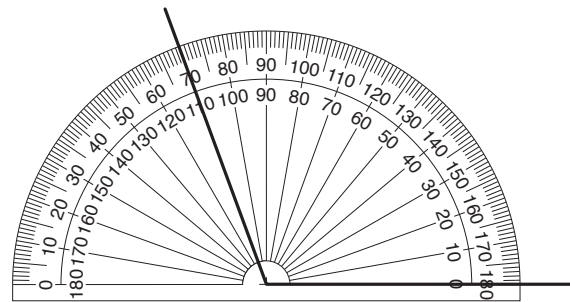
Read from the outside scale.  
One line of the angle is at  $0^\circ$  and the other line of the angle extends around to  $55^\circ$ .

**a)** Using the protractor measure the size of the angle shown.

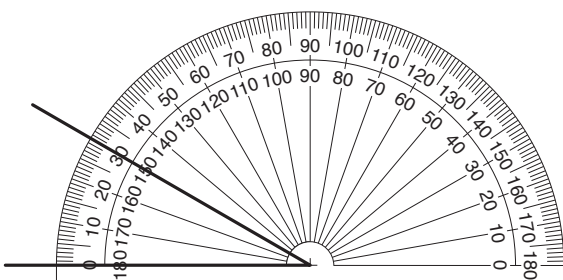


$165^\circ$

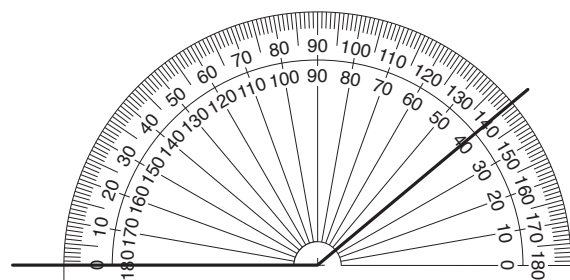
**b)** Using the protractor measure the size of the angle shown.



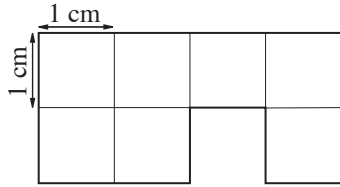
**c)** Using the protractor measure the size of the angle shown.



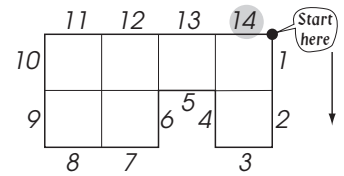
**d)** Using the protractor measure the size of the angle shown.



Q. Find the perimeter of the shape.

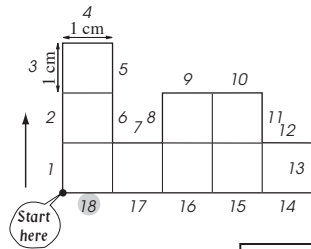
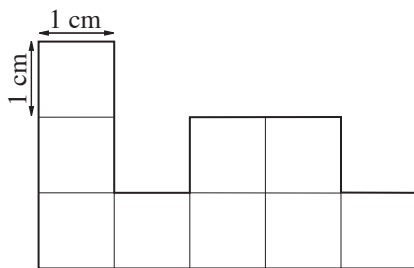


A. 14 cm



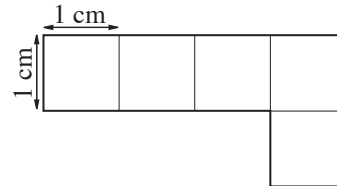
Each grid length measures 1 cm.  
Mark a starting point.  
Count the number of grid lengths around the outside of the shape.  
There are 14 lengths or centimetres.

a) Find the perimeter of the shape.



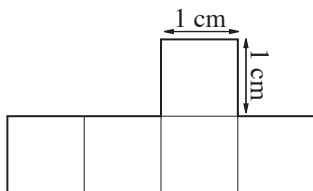
18 cm

b) Find the perimeter of the shape.



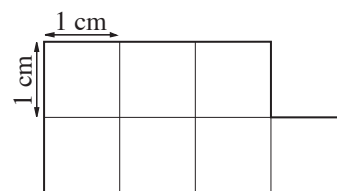
cm

c) Find the perimeter of the shape.



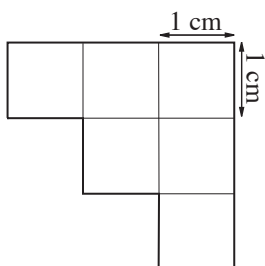
cm

d) Find the perimeter of the shape.



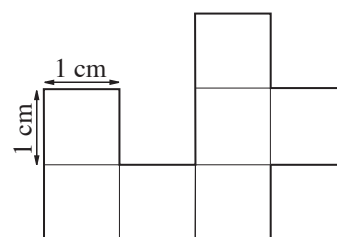
cm

e) Find the perimeter of the shape.



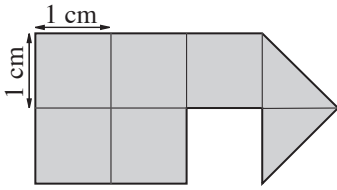
cm

f) Find the perimeter of the shape.



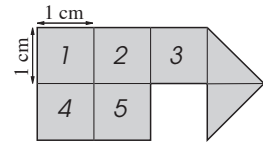
cm

Q. Find the area of the shape.



A.  $6 \text{ cm}^2$

First count the number of complete squares. There are 5 complete squares.

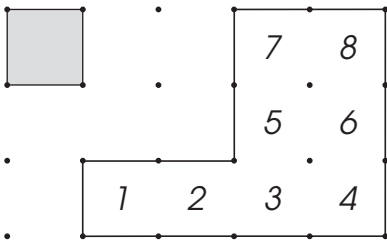


Then count the triangles. Each triangle doubled forms 1 square. There are 2 triangles in the shape. Together they make 1 more square.



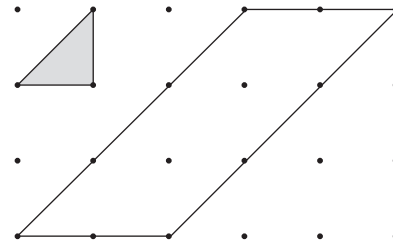
$$5 + 1 = 6$$

a) How many small squares are needed to cover the shape?

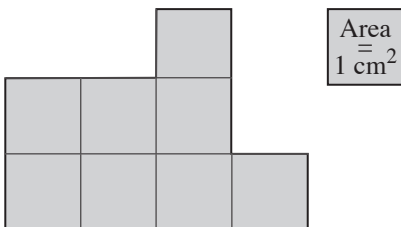


8

b) How many small triangles are needed to cover the parallelogram?

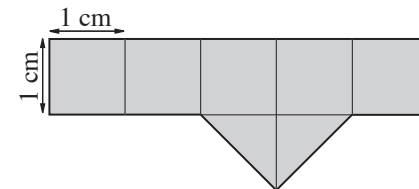


c) Find the area of the shape.



$\text{cm}^2$

d) Find the area of the shape.



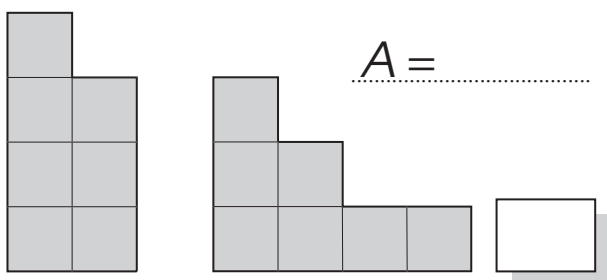
$\text{cm}^2$

e) The shapes below have the same:

- A) perimeter and area
- B) perimeter
- C) area

$P =$  .....

$A =$  .....

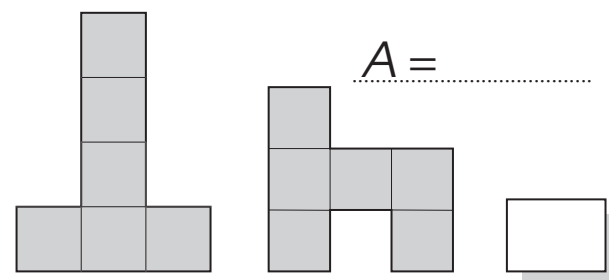


f) The shapes below have the same:

- A) perimeter and area
- B) perimeter
- C) area

$P =$  .....

$A =$  .....



**Skill 18.7** Describing volume by counting cubes.

MM3.2 11 22 33 44  
MM4.1 11 22 33 44

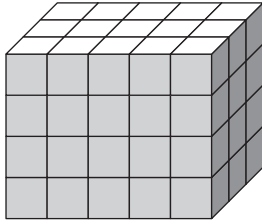
- Count the number of cubes needed to fill the top layer.
- Multiply this amount by the number of layers.



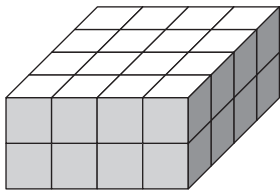
**Q.** How many cubes were used to make the prism?

**A.**  $3 \times 5 = 15$   
 $15 \times 4 = 60$

First count the cubes in the top layer.  
There are 3 rows of 5 cubes.  
Then count the number of layers.  
There are 4 layers of cubes.

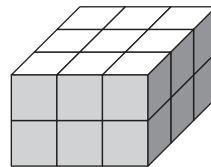


**a)** How many cubes were used to make the prism?



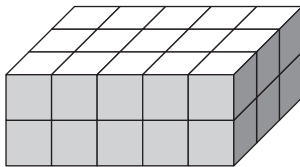
$4 \times 4 = 16$   
 $16 \times 2 = 32$

**b)** How many cubes were used to make the prism?



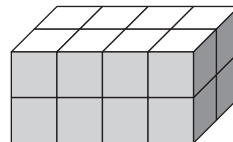
.....  
.....  
.....

**c)** How many cubes were used to make the prism?



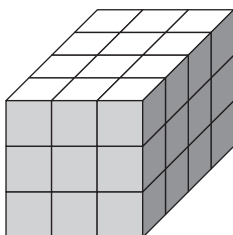
.....  
.....

**d)** How many cubes were used to make the prism?



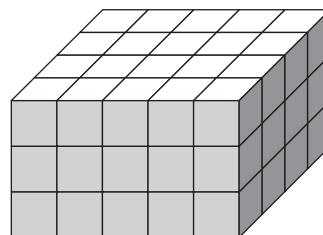
.....  
.....

**e)** How many cubes were used to make the prism?



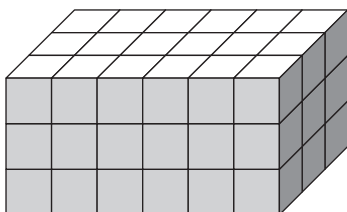
.....  
.....

**f)** How many cubes were used to make the prism?



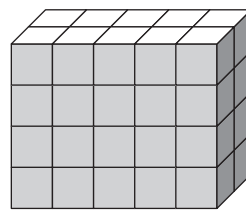
.....  
.....

**g)** How many cubes were used to make the prism?



.....  
.....

**h)** How many cubes were used to make the prism?



.....  
.....