Mixed Exercise 1 (Non-Calculator)

1.

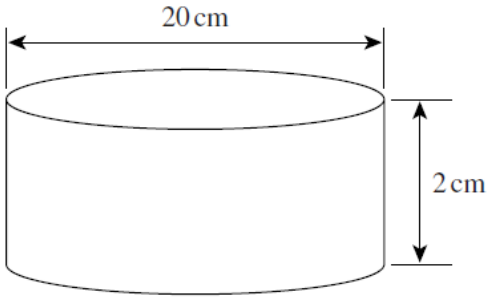
$P = x(y + 2)$

$Q = xy + 2$

Show clearly that $P - Q = 2(x - 1)$

2.

The diagram shows a cylinder.
The diameter of the cylinder is 20 cm.
The height of the cylinder is 2 cm.



Not drawn accurately

(a) Work out the volume of the cylinder.
Use $\pi = 3.14$

(b) Write your answer to part (a) in litres.

3.

(a) Complete this table of the powers of 5.

5^0	5^1	5^2	5^3	5^4	5^5	5^6	5^7
1	5	25		625	3125	15 625	78 125

(b) You are given that $15\,625 \times 78\,125 = 5^x$
Use the table to find the value of x.

(c) Use the table to work out $\dfrac{78\,125}{625 \times 5}$

4.

The nth term of a sequence is $4n - 9$

(a) Work out the first four terms.

(b) What is the difference between the 74^{th} term and the 73^{rd} term?

(c) The last term of this sequence is 391.
How many terms are there in this sequence?

5.

The probability that a boy is left-handed is 0.2
The probability that a girl is left-handed is 0.3
A school has 480 boys and 520 girls.

(a) Estimate the number of left-handed students in the school.

(b) A student is picked at random from the whole school.
Estimate the probability that the student is left-handed.

6.

(a) Solve the simultaneous equations

$$4x - 3y = 13$$
$$2x + y = 4$$

You **must** show your working.
Do **not** use trial and improvement.

(b) (i) Factorise $x^2 - 13x + 30$

(ii) Hence, solve the equation $x^2 - 13x + 30 = 0$

7.

Solve the equation $\frac{2x - 1}{4} + \frac{x + 2}{3} = 2$

---

8. Do not use a calculator for this question. Write down clear steps to show your working.

Evaluate $5^{-2} \times 100^{0.5}$

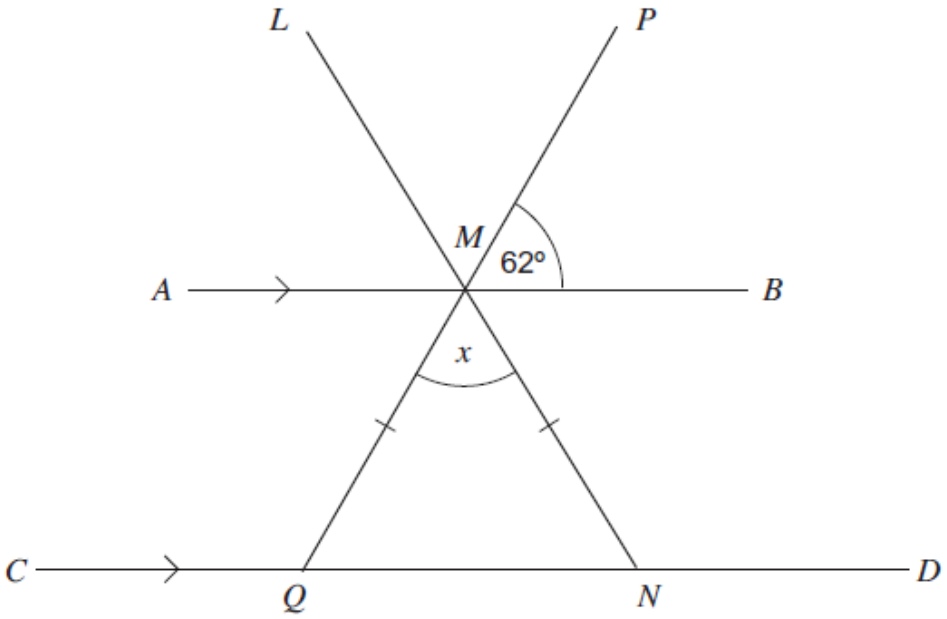
Write your answer in its simplest form.

9.

Make x the subject of $\sqrt{\frac{a}{x+b}} = c$

10.

AB is parallel to CD.
LMN and PMQ are straight lines.
$MQ = MN$



Not drawn accurately

Work out the value of x.

.....

.....

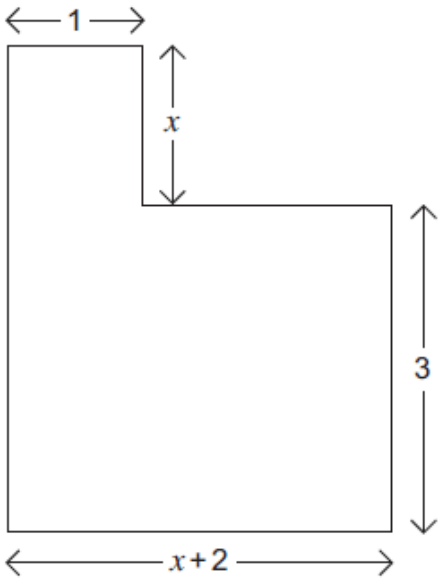
.....

.....

Answer ..... degrees *(3 marks)*

11.

The L-shape below has an area of 12 cm^2.
All corners are right angles.
All lengths are in centimetres.



Not drawn accurately

Work out the value of x.

.....

.....

.....

.....

.....

.....

.....

.....

Answer ..... cm *(4 marks)*