1. The diagram shows a patio in the shape of a rectangle.

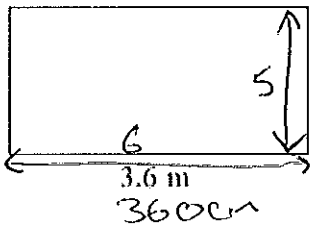

Diagram **NOT** accurately drawn

The patio is 3.6 m long and 3 m wide.

Matthew is going to cover the patio with paving slabs.
Each paving slab is a square of side 60 cm.

Matthew buys 32 of the paving slabs.

(a) Does Matthew buy enough paving slabs to cover the patio?
You must show all your working.

5 up 6 across 30 slabs required

Yes

(3)

The paving slabs cost £8.63 each.

(b) Work out the total cost of the 32 paving slabs.

	800	60	3
30	24000	1800	90
2	1600	120	6

24000
1800
1600
120
90
6
27616

£ 276.16

(3)

(6 marks)

*2. Mr Weaver's garden is in the shape of a rectangle.

In the garden

there is a patio in the shape of a rectangle
and two ponds in the shape of circles with diameter 3.8 m.

The rest of the garden is grass.

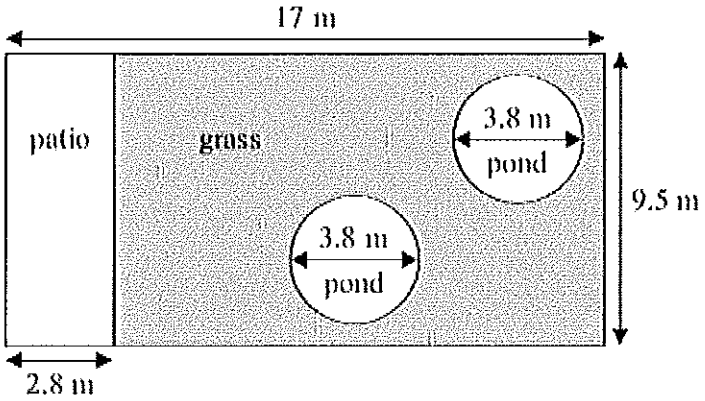

Diagram **NOT** accurately drawn

Mr Weaver is going to spread fertiliser over all the grass.
One box of fertiliser will cover 25 m2 of grass.

How many boxes of fertiliser does Mr Weaver need?
You must show your working.

$17 - 2.8 = 14.2$

Area of grass (rectangle) $= 9.5 \times 14.2 = 134.9 m^2$

Area of pond $= \pi (1.9)^2 = 11.34114948 m^2$

Area of grass − ponds $= 134.9 - 2(11.34114948)$

$= 112.217701 m^2$

Mr Weaver needs 5 boxes of fertiliser

(5 marks)

*3. Henry is thinking about having a water meter.

These are the two ways he can pay for the water he uses.

Water Meter	No Water Meter
A charge of £28.20 per year **plus** 91.22p for every cubic metre of water used **1 cubic metre = 1000 litres**	A charge of £107 per year

Henry uses an average of 180 litres of water each day.

Henry wants to pay as little as possible for the water he uses.
Should Henry have a water meter?

$180 \times 365 = 65700$ litres a year

$= 65.7$ cubic metres.

$65.7 \times 0.9122 = £59.93$

$£59.93 + £28.20 = £88.13$ a year

Henry should get a water meter

(5 marks)

*4. Here is part of Gary's electricity bill.

Electricity bill	
New reading	7155 units
Old reading	7095 units
Price per unit 15p	

Work out how much Gary has to pay for the units of electricity he used.

7155 − 7095 = 60 units used

60 × 0.15 = £9

Gary has to pay £9

(4 marks)

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5. Peter works out the cost of the gas he used last year.
At the start of the year, the gas meter reading was 12967 units.
At the end of the year, the gas meter reading was 14059 units.
Each unit of gas he used cost 44p.

Work out the mean cost per month of the gas he used last year.

14059 − 12967 = 1092 units.

1092 × 0.44 = £480.48.

$\frac{480.48}{12}$

£ 40.04

(5 marks)

6. Here is a diagram of Jim's garden.

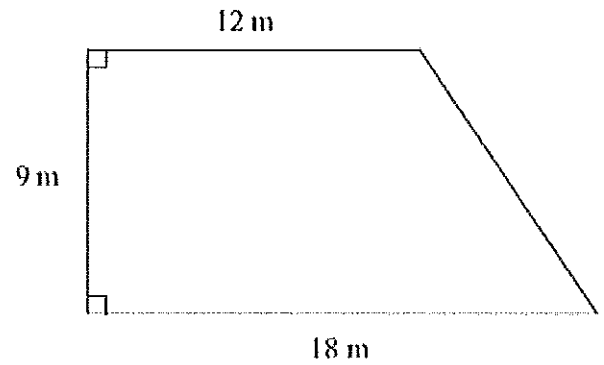

Diagram **NOT** accurately drawn

Jim wants to cover his garden with grass seed to make a lawn.

Grass seed is sold in bags.
There is enough grass seed in each bag to cover 20 m^2 of garden.

Each bag of grass seed costs £4.99

Work out the least cost of putting grass seed on Jim's garden.

$\frac{12+18}{2} \times 9 = 135\ m^2$

Jim needs 7 bags

$7 \times £4.99 = £34.93$

£ 34.93

(5 marks)

7. Jon has a flower garden in the shape of a circle.
The diameter of the garden is 5 metres.

Jon wants to put fencing around the edge of the garden.
The fencing costs £1.80 per metre.

Work out the total cost of the fencing.

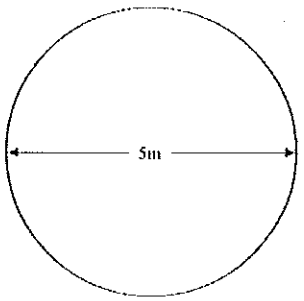

Diagram **NOT** accurately drawn

$\pi \times 5 = 5\pi$ m.

$5\pi \times 1.80 = 9\pi$.

$= £28.27$

£ 28.27

(5 marks)

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8. The diagram shows a CD.
The CD is a circle of radius 6 cm.

CDs of this size are cut from rectangular sheets of plastic.
Each sheet is 1 metre long and 50 cm wide.

Work out the greatest number of CDs that can be cut from one rectangular sheet.

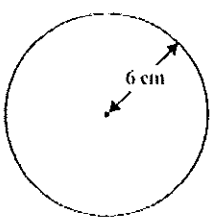
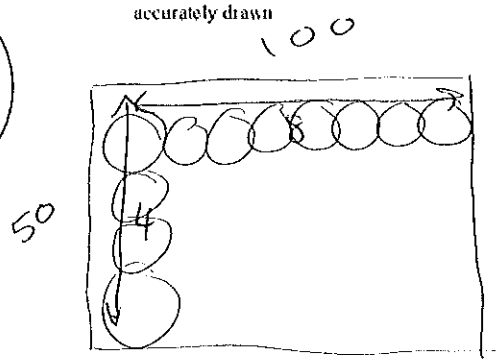


Diagram **NOT** accurately drawn



32

(4 marks)

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*9. Jenny fills some empty flowerpots completely with compost.

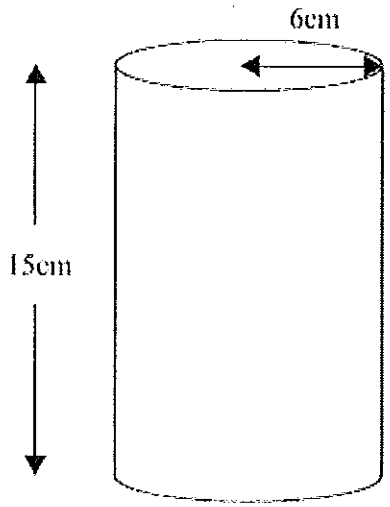

Diagram **NOT** accurately drawn

Each flowerpot is in the shape of a cylinder of height 15 cm and radius 6 cm.
She has a 15 litre bag of compost.

15000 cm^3

She fills up each flowerpot completely.
How many flowerpots can she fill completely?
You must show your working.

Volume $= \pi r^2 \times h$

$= \pi (6)^2 \times 15$

$= 540\pi$

$\frac{15000}{540\pi} = 8.84...$

She can fill 8 flowerpots completely

8

.....

(6 marks)