Name: _____

LOWER REMOVE MATHEMATICS REVISION
SUMMER

Use your notes, unit tests and textbooks to help you answer the following questions. You must show all your working. **Check whether you are allowed to use a calculator before starting each question.**

1) Solve the following equations, showing each stage of your calculations. (No calc)

a) $x - 2 = 8$

b) $3x + 6 = 27$

c) $\dfrac{x}{7} - 5 = 8$

d) $\dfrac{3x}{4} = 8$

e) $5(a + 2) = 25$

f) $6x - 4 = 3x + 11$

g) $4a + 8 = 6(a + 4)$

2) Simplify the following.

a) $4a + 5a$

b) $3x^3 + 4x^3$

c) $3a \times 2ab$

d) $a^2 \times a^3$

e) $4pc^2 \times 8p^3c$

f) $3a^2 + 7b - 2a^2 - 9b.$

g) $3x - 5y + 4x - 9y$

h) $\dfrac{3d}{6d}$

i) $\dfrac{8x}{16x}$

j) $\dfrac{20y}{30y^2}$

3) Work out the following
(No calc)

a) 14.37 + 21.8

b) 47.91 − 28.07

c) 2.5 x 0.36

d) 37.4 x 5.8

e) 5.6 ÷ 0.04

f) 18.4 ÷ 0.25

g) 21805 ÷ 35

4) i)   Rewrite each number of the calculation below, correct to 1 significant figure.
(No calc)

a) $\dfrac{54.6 + 98.7}{67.8 - 36.2}$

b) $\dfrac{31.6 \times 9.5}{0.47}$

ii) Now evaluate your answer to part i).a) and b)

5) Answer the following, showing all your working.
(No calc)

a) Write 0.95 as a fraction in lowest terms.

b) Write 65% as a decimal

c) Write $\dfrac{11}{25}$ as a decimal

d) write $\dfrac{4}{9}$ as a decimal correct to 2 d.p

e) write the following in ascending order.

8.4 , 8   , 8.06 , 8.003 , 8.51

f) Arrange the numbers below in ascending order of size, starting with the smallest.

44% , $\dfrac{9}{20}$, 0.43 , $\dfrac{4}{9}$

6) Factorise the following.

    a) $16x + 4y$

    b) $6a^3 - 3a^2$

    c) $2q^2 - 4qr$

    d) $6u^2v + 9u^3v$

7) Find the next two terms in each of the following sequences. (No calc)

    a) 3, 9, 15, 21, _____ , _____

    b) 3, 6, 10, 15, _____ , _____

    c) 64, 32, 16, 8, _____ , _____

    d) 1, 4, 16, 64, _____ , _____

    e) $\frac{7}{8}, \frac{8}{9}, \frac{9}{10}, \frac{10}{11},$ _____ , _____

8) From the list below, (No calc)

    2, 4, 8, 9, 16, 17, 25, 30

    Choose one number, which is

    a) a prime number

    b) a cubed number

    c) a square number

    d) a multiple of 15

    e) a factor of 36

    f) the square root of 81

9) Mr Small travels 162km in his new car and uses 18 litres of petrol.

   a) How many litres of petrol would he use to travel 135 km?

   b) How many kilometres can he travel if he has 24 litres of petrol in his car?

10) Write down all of the figures on your calculator to find the value of,

   i) a) $\dfrac{30.8 \times 7.65}{18.5 + 6.2}$

   b) $\dfrac{34.7}{2.9 - 1.86}$

   ii)   Write your answers to part i) correct to 2 sf

   iii)   Write your answers to part i) correct to 3 dp

11) Multiply out the brackets and simplify the following:-

   a) $4p + 6(q - p)$

   b) $3(5a - 2b) - 2(3a - 2b)$

   c) $2(3x - 4y) - 4(x + y)$

12) a) Write 784 as a product of prime factors.
(No calc)

b) Using your answer to part i), find the square root of 784.

13) a) A box contains 132 toy cars. Tom, Dick and Harry share them in the ratio 2 : 3 : 6.

How many cars does each boy receive?

b) James and Anna share sweets in the ratio 3 : 5. If James receives 24 sweets, how many sweets does Anna receive?

14) Mr Andrews bought a bicycle for £780. He then sold it to his friend, making a profit of 15% on his buying price.

a) Calculate the selling price.

A year later, his friend sold it to a shop and made a loss of 25%.

b) How much money did he lose?

c) What percentage of the original price is it worth now?

15)   Work out the following, showing all your working.
(No calc)
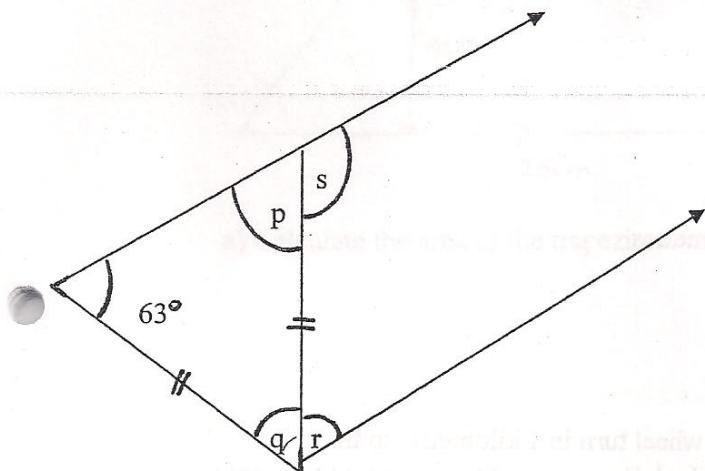
a) $\dfrac{2}{7} + \dfrac{3}{4}$

b) $3\dfrac{3}{8} - 1\dfrac{1}{4}$

c) $\dfrac{5}{9} \times \dfrac{18}{15}$

d) $\dfrac{22}{5} \div \dfrac{11}{7}$

16) Calculate the size of the angles marked p, q, r, s
(No calc)

p= _____

q = _____

r = _____

s = _____

17)　　　If $x=5$, $y=-4$, $z=-2$
(No calc)

Find the values of the following.

a)　　yz

b)　　$\dfrac{xy}{z}$

c)　　$\dfrac{4x}{5z}$

d)　　$x - y^2$

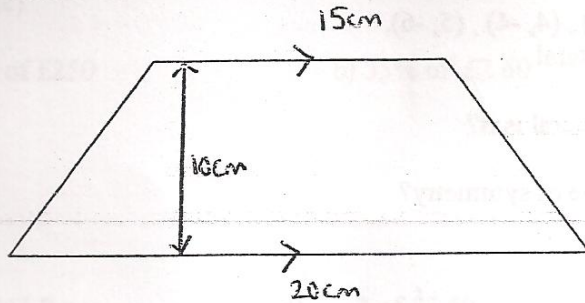e)　　$(x - z)^2$

18) A wheel has a diameter of 45 cm.

   a) Calculate the circumference the wheel, correct to 3sf

   b) Express your answer to part a) in metres

   c) How many revolutions would the wheel turn in 1 kilometre, to the
      nearest whole number?

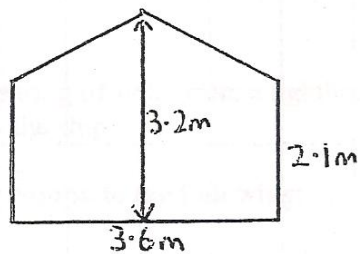   d) Calculate the area of the wheel, correct to 3sf.

19) The cross section of a rabbit hutch is shown below.

15cm

10cm

20cm

a) Calculate the area of the trapezium.

b) The rabbit hutch is 50 cm long. Calculate the volume of the rabbit hutch.

20) The cross section of a house is shown below

3.2m

2.1m

3.6m

a) Calculate the area of the cross-section

b) The house is 7.5m long. Calculate the volume of the house.

21) On the axes below (x axis from -6 to 6 and y axis from -8 to 10).

   i) Plot the points (4, -7), (3, -6), (4, -4), (5, -6).
   Join them to make a quadrilateral.

      What special type of quadrilateral is it?

      What is the equation of its line of symmetry?

      Label the quadrilateral A.

   ii) Complete the following transformations of A.

      a) A to B is a reflection the line y = -2

      b) A to C is a translation through vector $\begin{pmatrix} -8 \\ 1 \end{pmatrix}$.

      c) A to D is a rotation 90° clockwise about the point (3,2)

      d) A to E is an enlargement Scale Factor 3 about the point (6, -8)

      e) B to F is a reflection in the line y = x.
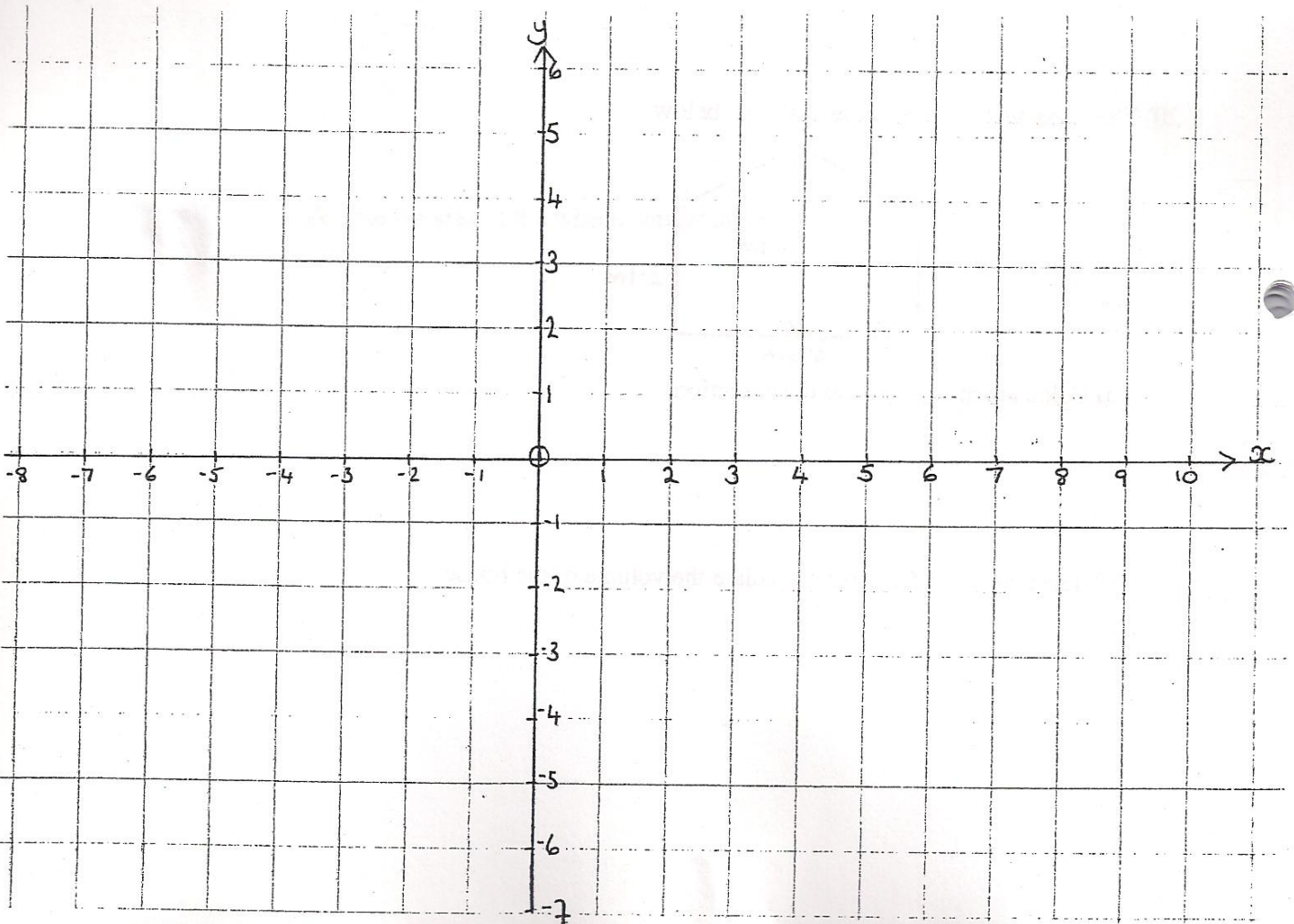
22) Work out the following.
(No calc)

a) 60% of £250   b) 35% of £2.60

c) $\frac{3}{8}$ of 11.2m   d) $\frac{3}{4}$ of £5.60

e) Express 8 centimetres as a percentage of 2 metres

f) Express 330ml as a percentage of 2 litres.

23) a) A ship is on a bearing of 068° from a lighthouse. What is the bearing of the lighthouse from the ship?

On plain paper complete the following:

b) Andrew and Barbara walk home from school (S)

Andrew walks 8km on a bearing of 115° from school to point A.

i)   Using a scale of 1 : 100 000, plot the position of A.

Barbara walks 6km on a bearing of 205° from school to the point B.

ii)   Plot the position of B.
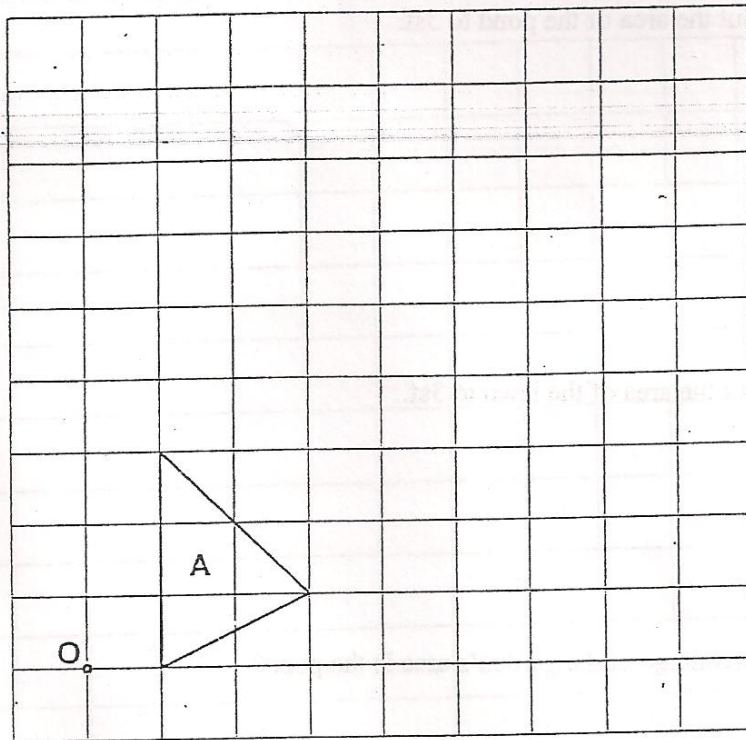
iii) Find the direct distance from A to B in km.

iv) Find the bearing of A from B.

Q.23 use this page for your diagram:-

24) a) With the centre O, enlarge triangle A, by scale factor 2.

b) Calculate the area of triangle A.

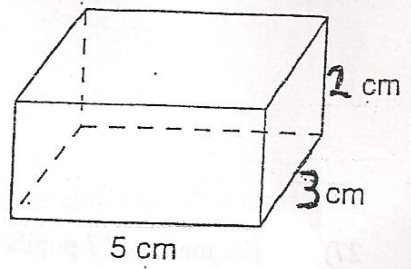c) Calculate the area of the enlarged triangle B.

25) A rectangular lawn measures 15.7 m by 8.9 m. In one corner of the garden is a circular pond with radius 2.5 m.

a) Work out the area of the pond to 3sf.
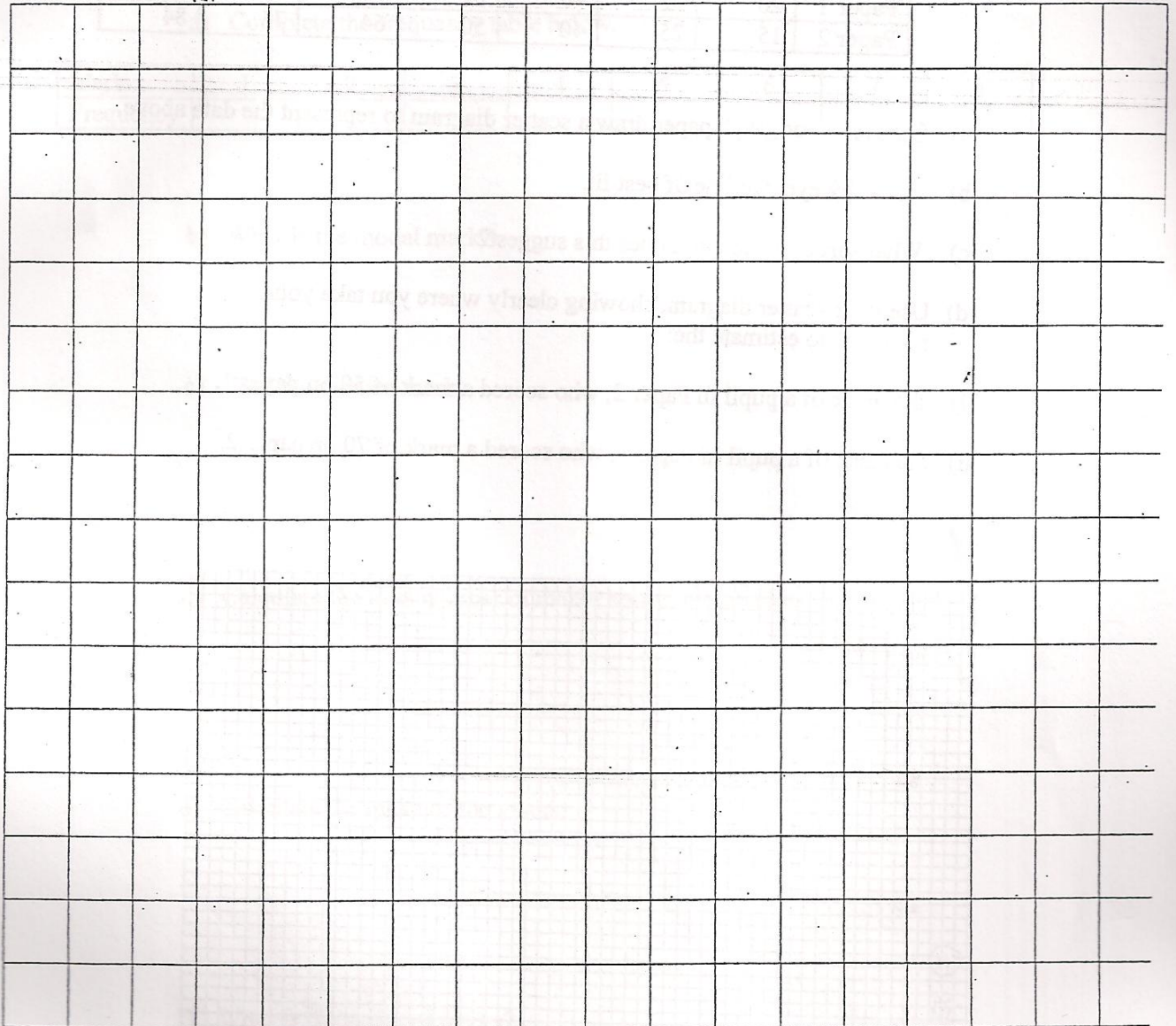
b) Work out the area of the lawn to 3sf.

c) What percentage of the garden's area is the pond?

26) A cuboid measures 5cm by 3cm by 2cm

2 cm
3 cm
5 cm

a) Draw a net of the shape.

b) Find the surface area of the net.

27) The marks of 7 pupils in two papers of a maths exam were as follows.

Paper 1	20	32	40	60	71	80	91
Paper 2	15	25	40	50	64	75	84

a) Below   on graph paper draw a scatter diagram to represent the data above.

b) Draw, by eye, the line of best fit.

c) What sort of correlation does this suggest?

d) Use your scatter diagram, showing clearly where you take your readings, to estimate the:

i) the mark of a pupil in Paper 2, who scored a mark of 50 on paper 1.

ii) the mark of a pupil in Paper 1, who scored a mark of 70 on paper 2.
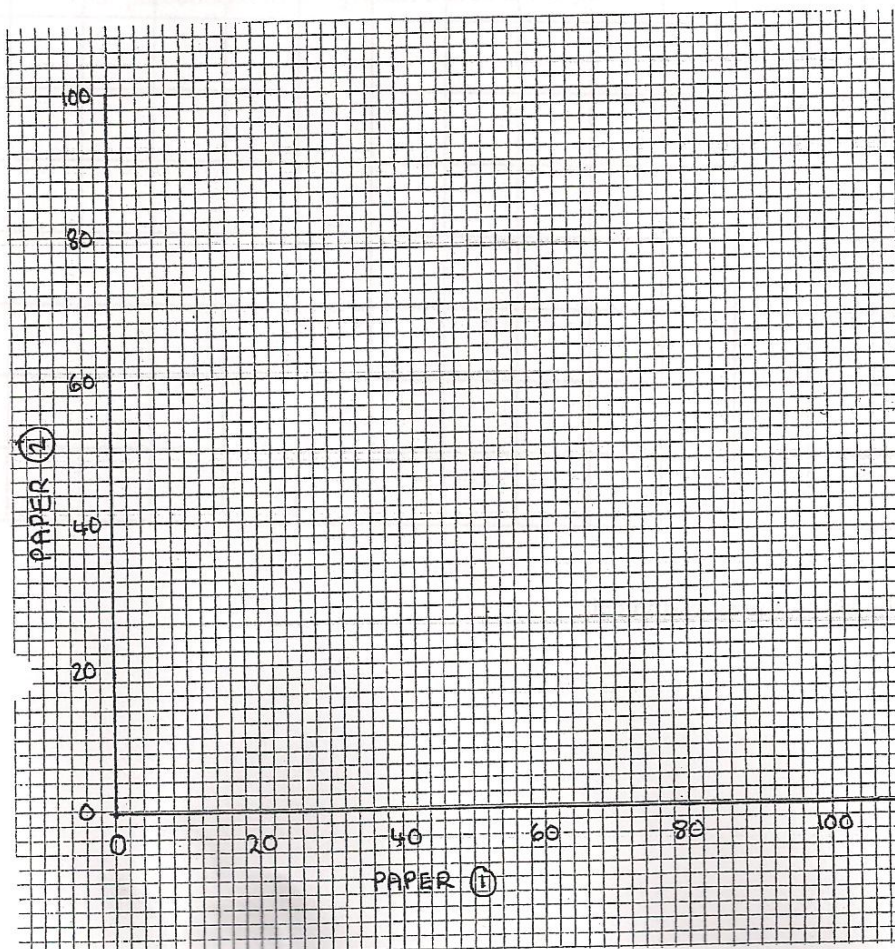
28) In a Latin test, the following marks were recorded for 15 of the children in the class.

1, 8, 2, 7, 6, 3, 4, 6, 7, 5, 2, 3, 7, 6, 7

a) Complete the frequency table below.

Mark	1	2	3	4	5	6	7	8
Frequency								

b) What is the modal mark?

c) Find the median mark.

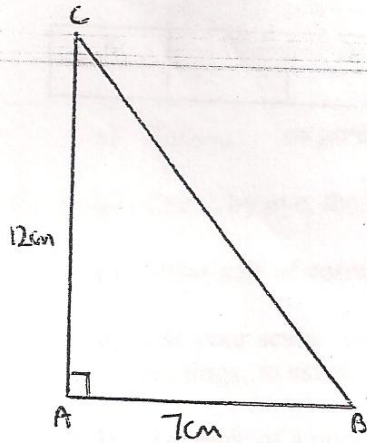d) Calculate the total number of marks scored by the class.

e) Calculate the mean of the marks.
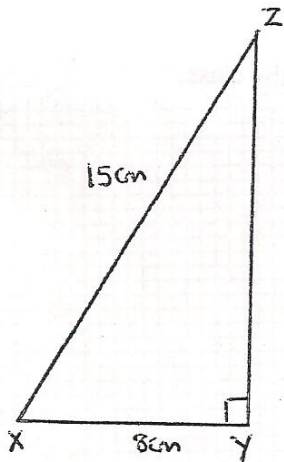
f) What is the range of marks?

29) Calculate the length of the third side of these right-angled triangles.

a)

12cm

7cm

A   B

C

b)

Z

15cm

8cm
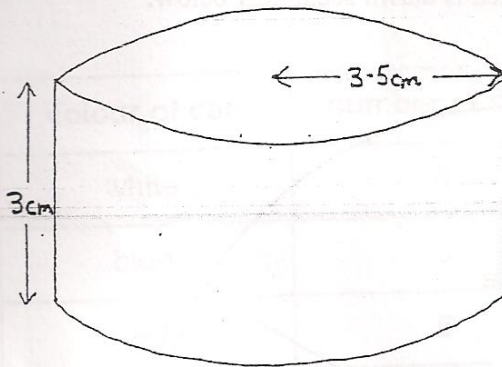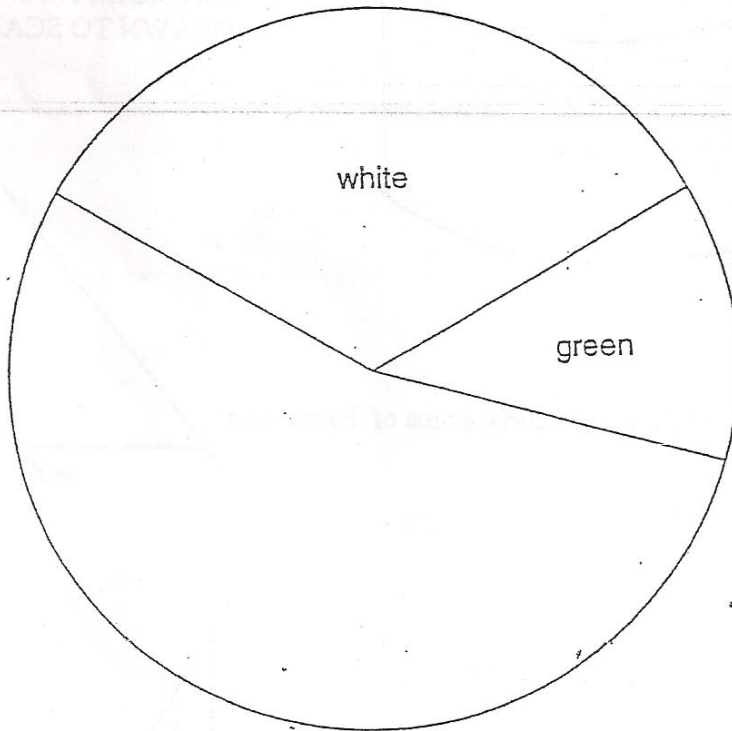
X   Y

30)

3·5cm

3cm

DIAGRAM NOT
DRAWN TO SCALE

a) Calculate the area of the curved surface area of the cylinder.

b) Calculate the total surface area of the cylinder

c) Calculate the volume of the cylinder.

31) John recorded the colour of cars parked in the school car park one day. He then constructed a Pie Chart, part of which is drawn accurately below.
Some sectors are not shown.

a) Measure the angle of the sector representing white cars.

b) If there are 8 white cars, what size angle represents 1 car?

c) How many cars are green?

d) Complete the table below

colour of car	number of cars	size of angle on pie chart
white	8	................°
blue	5	................°
red	6	................°
green	....	................°
yellow	....	30°
total	....	360°

e) Complete the Pie Chart to show the above information. Putting in the colour of
the car and the size of the angle in each sector.

32) In the following question give the probability of these events/outcomes as lowest term fractions:

In a bag there is an assortment of 24 balls. There are 9 cricket balls, 6 footballs, 5 tennis balls, 3 rugby balls and 1 hockey ball.

i) If I reach into the bag and take one ball out at random, what is the probability that it is:

a) a hockey ball

b) a cricket ball

c) not a football

d) a squash ball

e) either a tennis or rugby ball

f) neither a cricket nor a hockey ball

I draw a cricket ball out of the bag and do not replace it.

ii) I then draw another ball. What is the probability that:

a) it is a cricket ball

b) neither a football nor a rugby ball