

Functional Skills

Level 2

Diagnostic Assessment

Mathematics

LEVEL 2

Name

Date

Mathematics

Level 2 – Diagnostic Test

This test is designed to help you and your tutor identify any aspects of number work where you may need support and extra practice to achieve your aims for the future.

Equipment you will need:

A calculator for the 'Shape and Space' and 'Handling Data' sections
(You should **not** use a calculator for questions 1 to 11 on number work)

A ruler, protractor, a pair of compasses, pen and pencil.

PLEASE - Show all your working out - it will help your tutor to help you.

Formulae and reminders

Area of a rectangle = length x width

Area of a triangle = $\frac{1}{2}$ x base x height

Volume of a cuboid = length x width x height

Volume of a prism with constant cross section = area x length

Area of a circle = π x radius²

Circumference of a circle = π x diameter

Use π = 3.142 or the value from your calculator

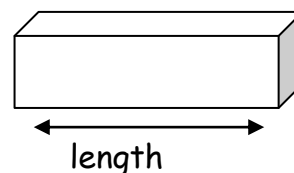
Perimeter = the distance all round a flat object

A Net is a drawing you can cut out and fold to make a 3-dimensional shape

Mode = the most frequently occurring value in a set of data.

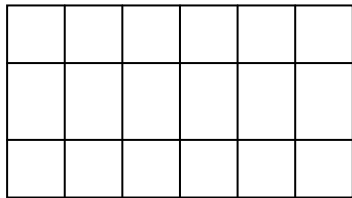
Median - the middle value of a set of data

Mean - the sum of a set of data divided by the number of pieces of data.



Level 2 Diagnostic Test – Mathematics

1. There are 56 cars in the college car park; $\frac{3}{4}$ of the cars are over two years old. How many cars are over two years old?
2. A student spends $\frac{1}{2}$ of his weekly income on food, $\frac{1}{6}$ on entertainment, $\frac{1}{4}$ on clothes and the remainder he saves. What fraction of his weekly income does he save?
3. This sketch shows a bar of chocolate. Shade in $\frac{2}{3}$ of the bar.



Delicious Bar

4. A school has 150 pupils; 44% are girls. How many girls are at the school?

Level 2 Diagnostic Test – Mathematics

5. An article is bought for £40 and sold for £48. Calculate the percentage profit.

6. Scott, Martin and Adrian are in a lottery syndicate. Each week Scott pays £2, Martin pays £3 and Adrian pays £5. They win £15,000 and divide their winnings in the same ratio as their weekly contributions. Calculate how much each receives.

7. A length of wood is 2.5m long. From the wood 8 equal pieces of length 10 inches are to be cut. Given that 1 inch = 2.54 cm. Calculate to the nearest cm the amount of wood remaining.

Level 2 Diagnostic Test – Mathematics

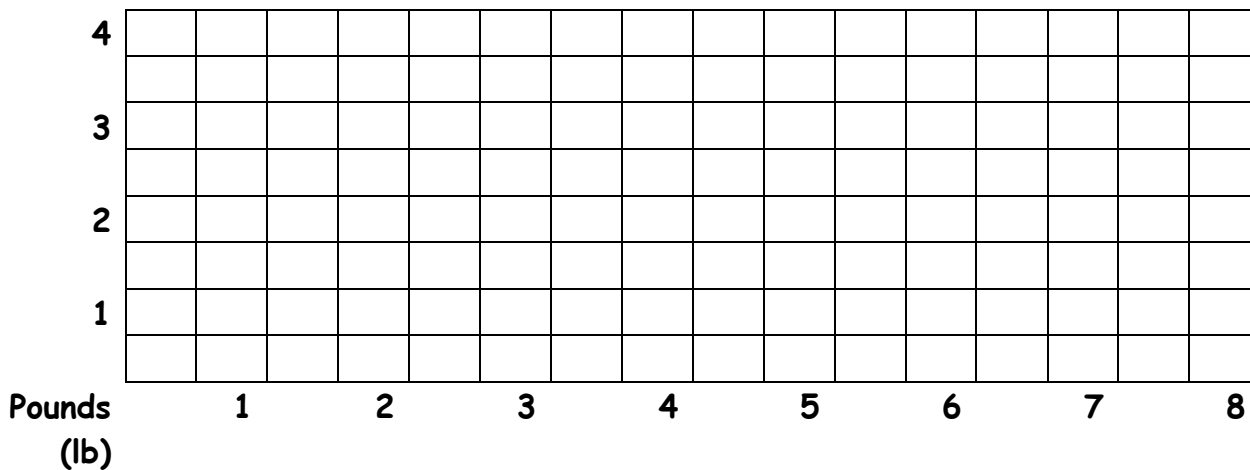
8. The cost of hiring a car is £30 plus 20p for every mile travelled.
- Calculate the cost to hire the car and travel 500 miles.
 - How many miles would you have travelled if you paid a total charge of £50?
 - Write a formulae to represent the cost of hiring a car when you have driven 'x' miles
- 9
- Simon has an overdraft of £65 on his bank account and he pays in £90. What is his balance now?
 - Angela also has an overdraft of £65 on her bank account and she pays in £50. What is her balance now?

Level 2 Diagnostic Test - Mathematics

10. The table shows the number of tins of food sold by a supermarket store during the period of 1986 - 1996. Complete the missing figures in the table.

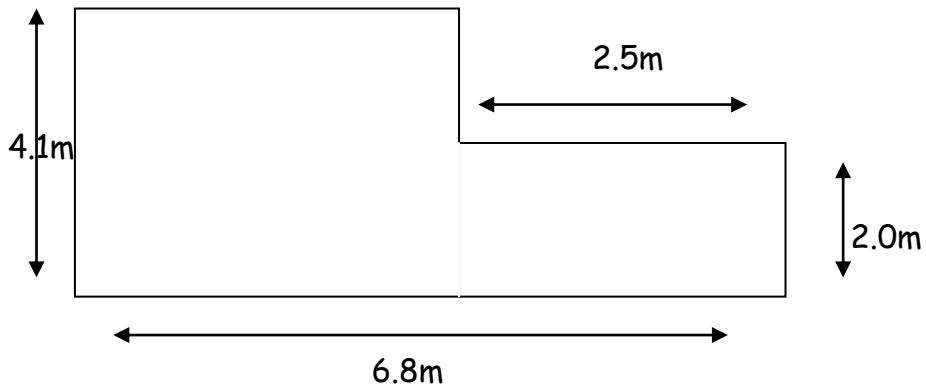
Year	Beans (millions)	Peaches (millions)	Soup (millions)	Total Sales
1986	48.3	0.8	54.1	102,200,000
1988	69.6	18.2	52.3	
1990		29.2	50.7	140,500,000
1992	43.7	50.9	24.7	
1994	56.4		6.7	133,600,000
1996	56.0	39.8	4.5	

11. The graph shows the conversion of pounds to kilograms. Use the graph to estimate the weight in:
- a. Pounds of a 1 kg bag of sugar
 - b. Kilograms of a 7lb maximum load for a washing machine.



Level 2 Diagnostic Test - Shape & Space

12. The diagram shows the plan of a lounge. (all corners are right angles)



Calculate:

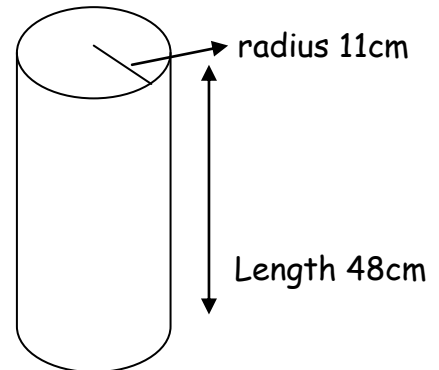
- The total floor area
- The total perimeter
- The volume of the room, if the height is 2.4m

Level 2 Diagnostic Test - Shape & Space

13. A water barrel is shown

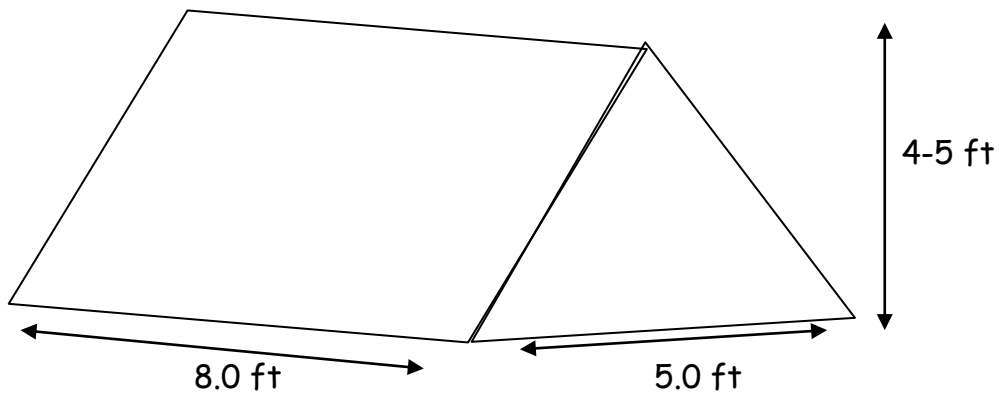
a. Find the volume of water in litres it can contain when full

Use the conversion: $1000\text{cm}^3 = 1 \text{ litre}$
Express your answer in the nearest litre



b. Find an estimate for the volume. Using $\pi = 3$ and working to the nearest 10cm to check your calculator answer.

14. Two friends go away for the weekend camping and taking a small ridge tent.



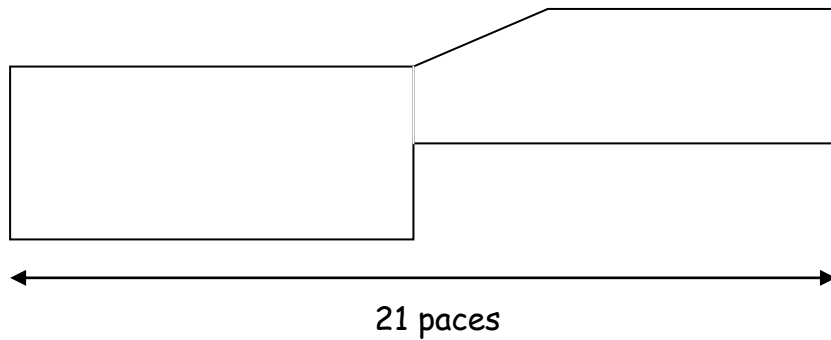
Using the sketch shown find:

a) The volume of the tent

b) The floor area of the tent

Level 2 Diagnostic Test - Shape & Space

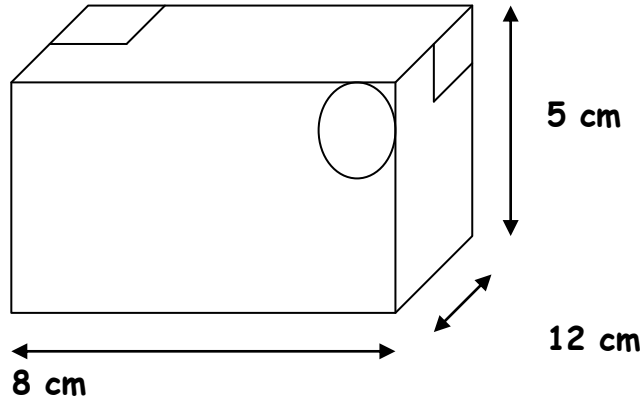
15. Henry paces out a building in order to find its length. It is 21 paces long
Henry believes his pace is 0.9 m long



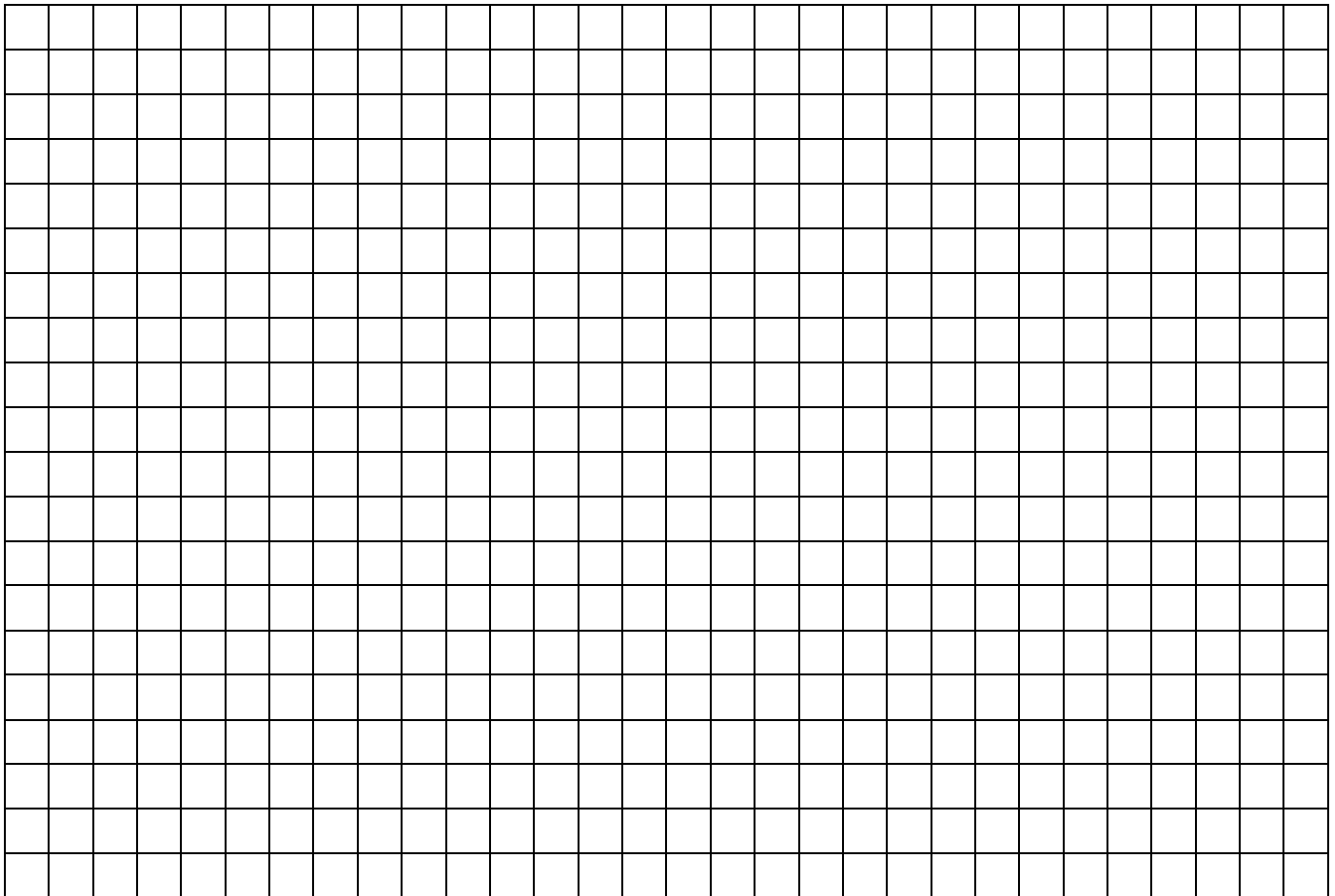
- a) What is his estimate of the length?
- b) In fact, Henry's paces vary between 0.85 m and .095 m in length
- What is the longest length the building could be?
 - What is the shortest length the building could be?

Level 2 Diagnostic Test - Shape & Space

16. The drawing shows a cuboid with 3 shapes painted on the sides (the sides not visible in the diagram are blank). The squares both have sides of 2.5 cm and the circle has a radius of 1.5cm.



Complete the net of the cuboid, showing the painted shapes. State the scale which is used for the net.

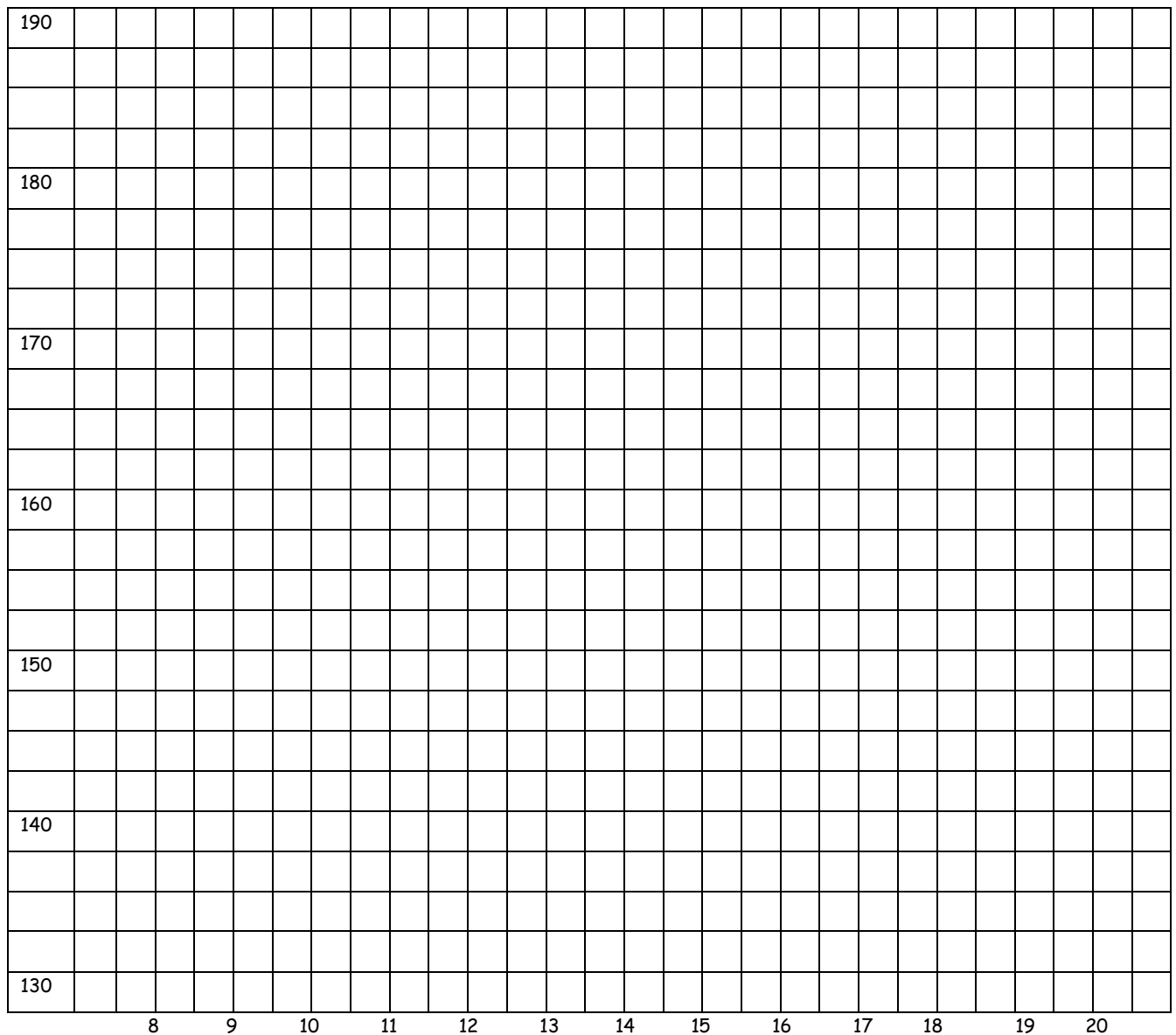


Level 2 Diagnostic Test - Handling Data

17. The table shows the mean heights of males and females between the ages of 8 and 20 years.

Ages	8	10	12	14	16	18	20	Mean
Females (cm)	141	145	156	161	167	172	175	160
Males (cm)	135	140	155	170	180	183	185	164

a) Draw two straight lines to show the correlation between age and height.



- b) Use your graph to estimate the age when the mean height of both males and females were the same.
 c) At what height was this?

Level 2 Diagnostic Test - Handling Data

18. Indicate the probability scale what you think the chance of:

- a) It raining on April 21 next year
- b) Income tax will be abolished next year
- c) Next year you will be a year older than you are today

0%

50%

100%



Impossible

Certain

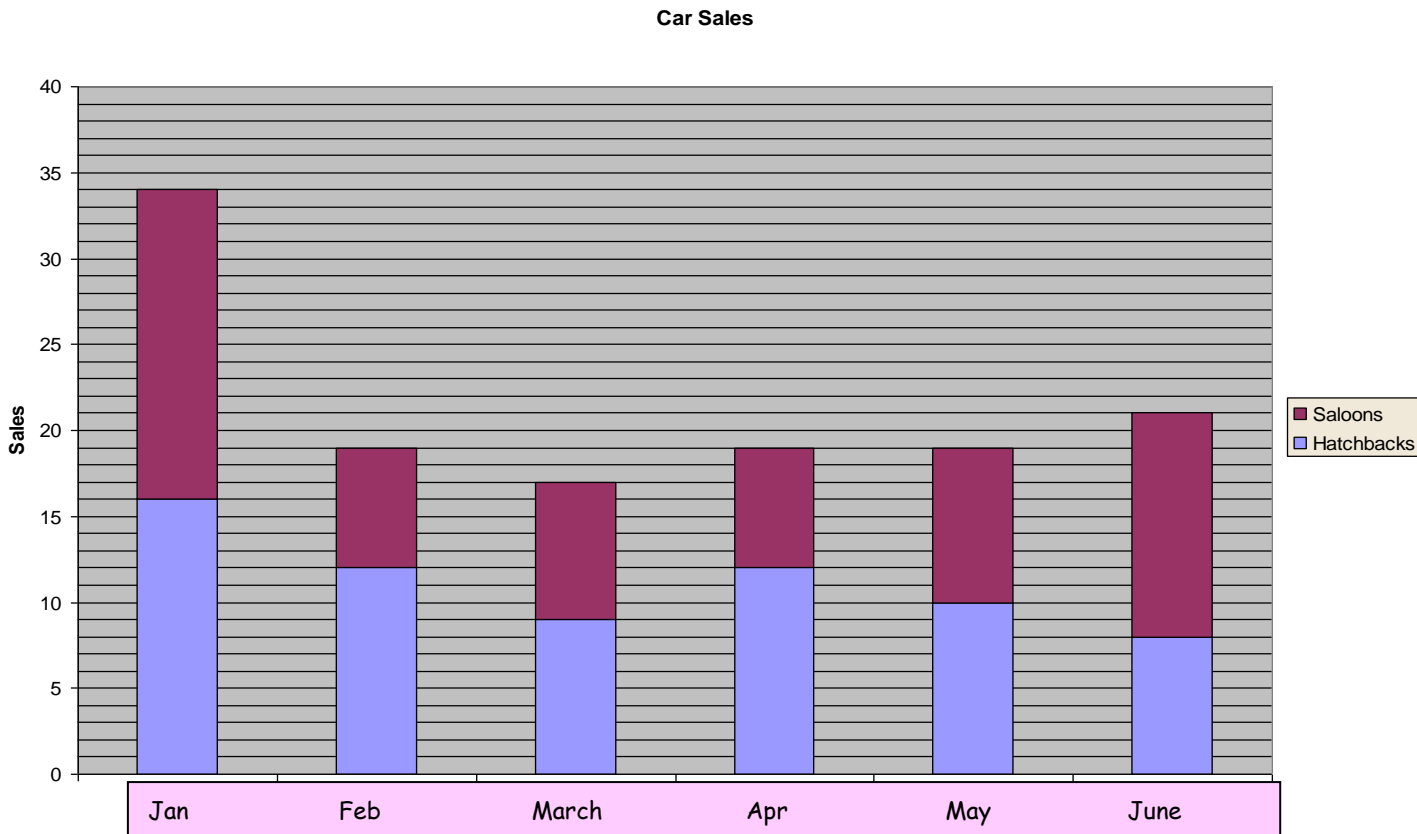
19. What is the probability of selecting an even number from the numbers 10 to 20 inclusive?

20. The following table shows the number of umbrellas manufactured by a small factory over a 4 month period. Choose a suitable scale and draw a pictogram to represent this information.

Month	Output
April	1800
May	900
June	300
July	450

Level 2 Diagnostic Test – Handling Data

21. The number of saloons and hatchback cars sold by a garage are shown in the Component Bar Chart



From the bar chart find the:-

- Number of saloon cars sold in January
 - Number of hatchback cars sold in June
 - Total number of cars sold during the 6 month period
22. A box contains 40 apples whose weights are shown in the frequency table below:

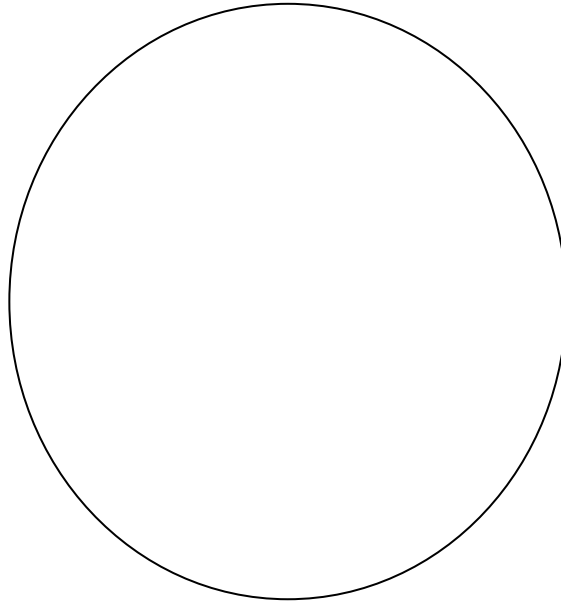
Weight (g)	70	80	90	100	110	120	Total
Frequency	2	7	9	11	8	3	40
Weight x Frequency	140	560				360	

Using this information calculate the:

- Mean weight of the apples
- Median weight of the apples
- Modal weight of the apples

Level 2 Diagnostic Test - Handling Data

22. A sample of 180 people was taken from those visiting a theme park. They were asked which was their favourite ride.
- a) Two fifths of all people asked said their favourite ride was the roller coaster. Calculate the angle in degrees needed to represent this information and draw the angle in the pie chart.



- b) The angle relating to those who gave their first choice as the long flume is 120° . Calculate the number of people who preferred the log flume.

