

# Functional Skills Maths

Level 2

Diagnostic Assessment

v1.0

This assessment 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 ruler, pen, pencil and extra paper for workings out, attaching any extra paper used to your answer sheet as this may help your tutor.

**You may use a calculator for questions 21, 22, 36, 37, 38 only.**

- 1) You have been to five ice hockey matches. These are the numbers of supporters at each match.

What is the difference between the largest number of supporters and the smallest?

75,066      7,506      75,650      7,056      75,026

- 2) You write down the temperatures at different times on one of the match days.

Time	Temperature
Midnight	-6°C
4 am	-8°C
8 am	-4°C
noon	7°C
3 pm	6°C
7 pm	-2°C

What is the difference between the lowest temperature and the highest?

- 3) You record a temperature of 0.75°C. Is this a positive or negative temperature?

Positive / Negative

- 4) The ticket price for the ice hockey match was £14.50.

The price has increased by 7%.

How much is a ticket after the increase?

- 5) The Taylor family want to go on holiday for two weeks.

Hotel	Return flight cost per person	Hotel cost per person - 1 week	Hotel cost per person - 2 weeks	Return airport transfer per person
Alcudia Palace Hotel	£235.40	£430	£590	£25
Alicante Royal Hotel	£240.70	£410	£560	£28

How much will it cost for the family of four to go to the Alicante Royal Hotel for 2 weeks including return flights and return airport transfer?

- 6) Mrs Taylor looks at reviews online of the two hotels. Each category has been scored out of 10.

Alcudia Palace Hotel	Review 1	Review 2	Review 3	Review 4	Review 5	Review 6	Review 7	Review 8
Location	8.2	3.5	5	6.7	6.3	6	7.5	6
Service	9	6.8	0	8	8.2	9	8	7

Alicante Royal Hotel	Review 1	Review 2	Review 3	Review 4	Review 5	Review 6
Location	6	7.7	9	8.9	5.2	7.8
Service	6	7.4	8	8.6	9	9

Which hotel has the higher mean value for service?

Alcudia Palace Hotel / Alicante Royal Hotel / Both the same

The table below shows the mean monthly temperatures in Alcudia for the last 2 years in degrees Celsius.

°C	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
<b>Last year</b>	9	10	11	14	19	22	27	29	21	18	11	6
<b>2 years ago</b>	7	11	10	13	17	23	25	25	20	18	12	9

7) What is the difference in the range of temperature between the two years?

8) What was the modal temperature last year?

9) What was the median temperature 2 years ago?

10) The luggage allowance on the flight is 20 kg per person.

This is a list of the weights of some items already packed in one of the suitcases.

<b>Toothbrush</b>	<b>95 g</b>
<b>Toiletries</b>	<b>1.4 kg</b>
<b>Shoes</b>	<b>3 <math>\frac{1}{8}</math> kg</b>
<b>Beach towel</b>	<b>0.6 kg</b>
<b>Clothes</b>	<b>8580 g</b>

What is the total weight of the items already packed?

\_\_\_\_\_kg

- 11) Mr Taylor brought back 180 Euros to the UK. The exchange rate was €1.2 to £1. How much did he get in £ sterling?
- 12) It is your daughter's birthday and you are preparing a family meal.  
The joint of meat needs to be cooked for 30 minutes per 500 g plus an extra 20 minutes.  
How long will it take to cook a joint of meat weighing 2.5 kilograms?
- 13) You decide to bake some cakes. You need 150g of flour for 12 cakes, how much flour do you need for 30 cakes?
- 14) A friend gives you a recipe for a birthday cake. The recipe states you need 12 ounces of flour. You have a 500g bag of flour, do you have enough flour to bake the cake?  
1 ounce = 25 g  
Yes / No

You are buying a mobile phone and look at the table of tariffs below.

Network - TalkLots	Texts	Minutes	Charge per month
Contract	500	100	£15.00
Pay as you Go	10p each	20p a minute	None

- 15) How much would you pay if you sent 50 texts and used 65 minutes on the "Pay as you Go" package with TalkLots?
- 16) If you sent 40 texts a month and used 50 minutes, would you be better to go onto a contract with TalkLots?  
Yes / No

- 17) You went to the gym last week and spent the following amount of your time on the running machine.

Mon 0.3      Tues 15%      Wed  $\frac{1}{4}$       Thurs 0.2      Fri  $\frac{1}{8}$

On which day did you spend the least amount of time on the running machine?

**Select the correct answer.**

Monday      Tuesday      Wednesday      Thursday      Friday

- 18) You have a 1.5 litre bottle of water and drink 295 millilitres. Your friend drinks 135 millilitres. How much water is left?

**Select the correct answer.**

1.007 litres      1.7 litres      1.07 litres

- 19) On one of the days you went to the gym, the ratio of men to women was 3 : 2.  
If 120 men used the gym, how many women were there?

- 20) There are 1800 gym members in total.  
 $\frac{3}{4}$  are aged 25 – 59 years  
 $\frac{1}{5}$  are over 60 years and the remainder are under 25 years.

How many members are under 25 years?

- 21) Tom works part-time at a theme park. Last week he worked the following hours but he needs to complete his timesheet in decimals.

**You can use a calculator for this question.**

*Timesheet*

*Employee Name : Tom Jackson*

Day	Hours Worked Fractions	Hours worked Decimals
Monday	$7\frac{1}{4}$	
Tuesday	$6\frac{3}{4}$	
Wednesday	$5\frac{1}{5}$	
Thursday	$6\frac{1}{10}$	

- 22) Tom earned £166 last week and he worked for 24 hours. How much does he earn per hour?

**You can use a calculator for this question.**

- 23) In March Tom had -£165 in his bank account. In April he had -£156. In which month did he have the least amount of money in his account?

March / April

- 24) Tom has been asked to hand out free badges. There are 34 boxes and each box contains 22 badges. He estimates he has approximately 700 badges to hand out. Is this a reasonable estimation?

Yes / No



- 25) 8% of the rides in the park are water rides. If there are 4 water rides, how many rides are there in total?

- 26) A thermometer at the park shows a reading of 86° Fahrenheit. If the temperature goes over 32° Celsius, Tom must have an extra break.

He uses this formula to calculate the temperature in °C.

$$F = 1.8C + 32$$

Will Tom get an extra break?

Yes / No

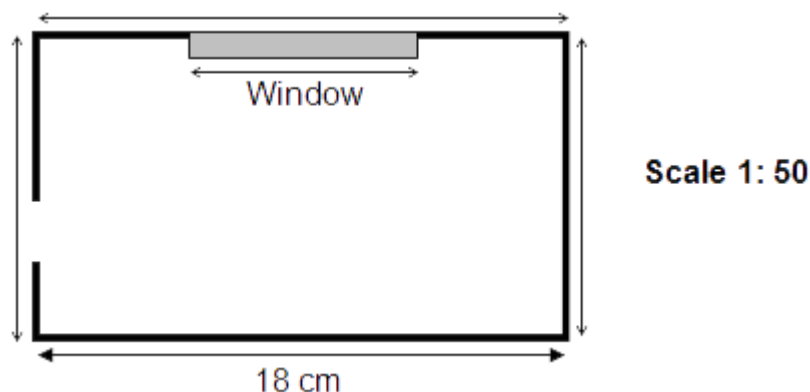
- 27) Put the following in order from smallest to largest.

$\frac{1}{4}$       0.29      23%       $\frac{1}{5}$       0.027

smallest

largest

- 28) You are building a new extension and are looking at the plans.



Referring to the scale, what is the actual measurement of the wall marked 18 cm on the plan?

\_\_\_\_\_ metres

- 29) You buy the following materials for the new extension.

**Complete the table and work out the total cost.**

Item	Quantity	Cost per item	Cost (£)
tonne of sand	2	£75.00 per tonne	150.00
bag of cement	20	£32.70 per bag	
bricks	350	50 p per brick	
		<b>Total Cost</b>	

- 30) You have five pieces of wood.

**73 cm**

**1.6 m**

**2.87 m**

**325 cm**

**4.04 m**

What is the total length of wood?

\_\_\_\_\_m

- 31) A group of friends are going to a cottage for the weekend and you look at the road map to see where it is. The scale used is 1 : 250,000. The distance measures 8.5 cm on the map.

What is the actual distance?

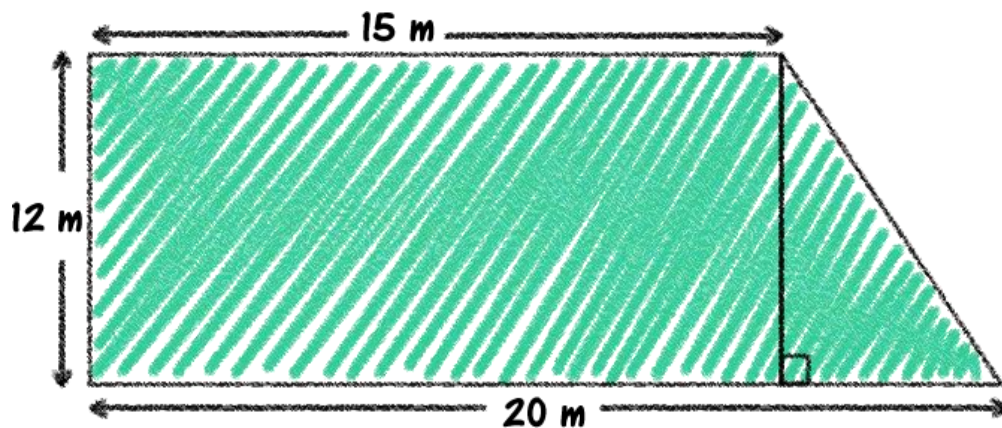
- 32) One of your friends lives 225 km away. It took him 2.5 hours to travel to the cottage. At what speed did he travel?

$$\text{Distance} = \text{Speed} \times \text{Time}$$

- 33) It cost £430 to rent the cottage for the weekend. Last year it cost £400. What percentage increase is this?

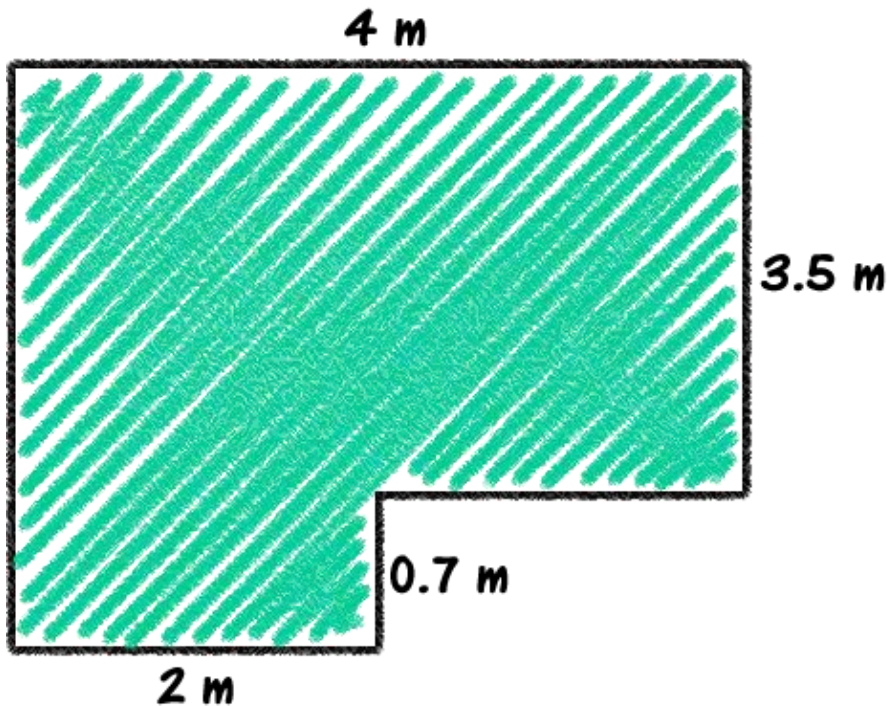
- 34) Greg is landscaping a garden.

The diagram shows the plan of the garden.



What is the total area of the garden?

- 35) Below is a plan of the vegetable plot. What is the perimeter of the vegetable plot?



- 36) Greg builds a new pond which has a volume of  $7.35 \text{ m}^3$ . It is 4.2 m long and 50 cm deep. **You can use a calculator for this question.**

What is the width of the pond?

- 37) There will be a circular patio with a diameter of 7 metres. Greg is going to put a tiled edge around the patio. **You can use a calculator for this question.**

What is the circumference of the patio?

**Circumference of a circle =  $2\pi r$**

**Use  $\pi = 3.14$**

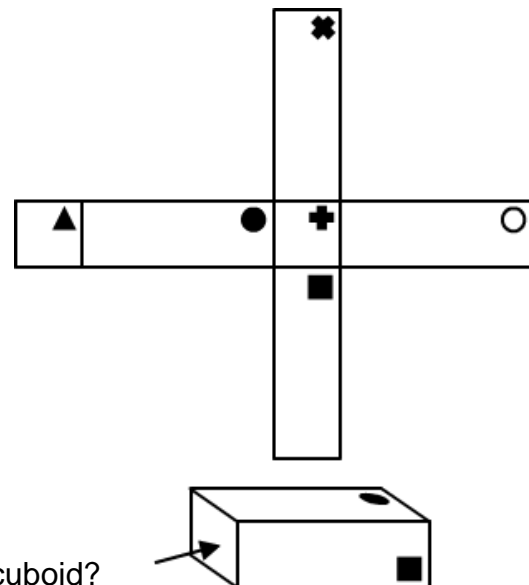
- 38) A semicircular flowerbed has a diameter of 3 m. What is the area of the flowerbed? Give your answer to 1 decimal place. **You can use a calculator for this question.**

**Area of circle =  $\pi r^2$**

**Use  $\pi = 3.14$**

- 39) The mean of Greg's journey times to work on 3 days was 28 minutes. If it took him 27 minutes and 25 minutes on two of days, how long did it take him on the third day?

- 40) This is a net of a cuboid.

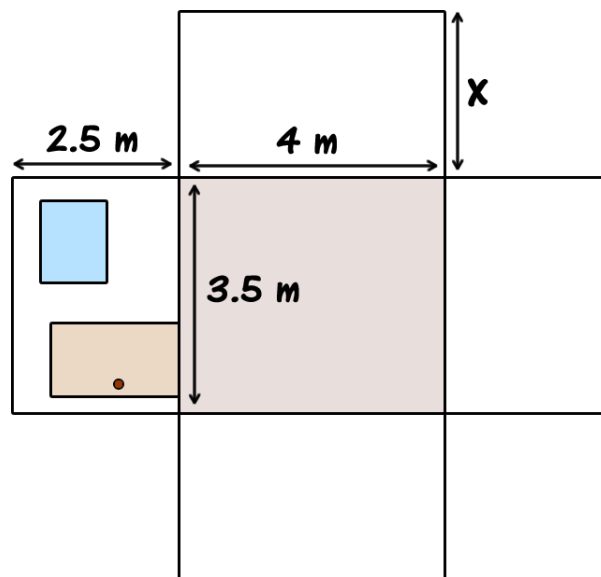


What is the missing shape on the cuboid?

**Select the correct answer.**

**O    ▲    X    +**

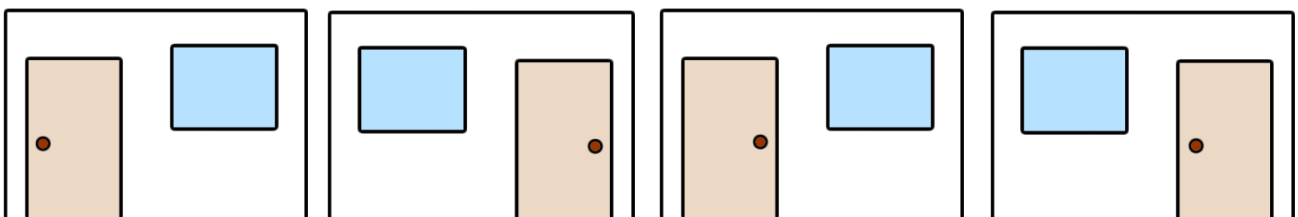
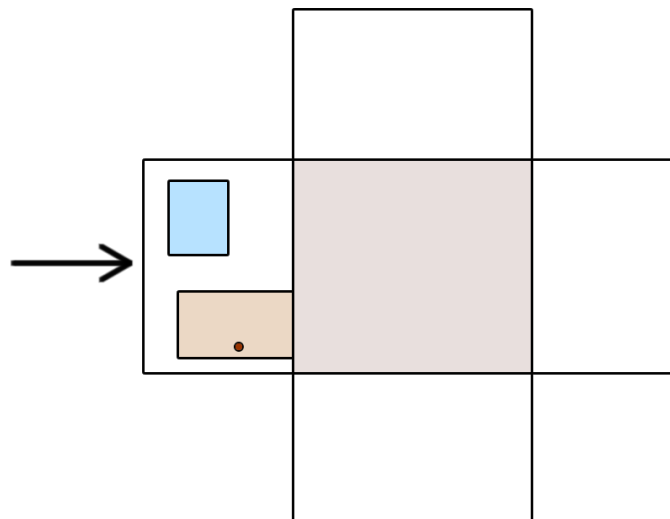
- 41) This is a net diagram of a room showing the floor and 4 walls (ceiling not included).



What is the measurement at x?

\_\_\_\_\_ m

- 42) What does the side elevation look like when looking from the outside of the room?



- 43) Keira keeps a record of the number of songs she downloads each month. The table below shows this information.

Month	Total
January	16
February	23
March	19
April	21
May	26
June	18

Which chart represents the information for January to April?

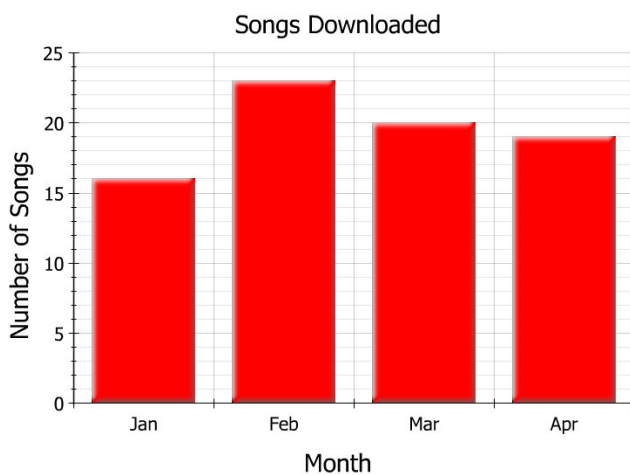


Chart A

Chart B

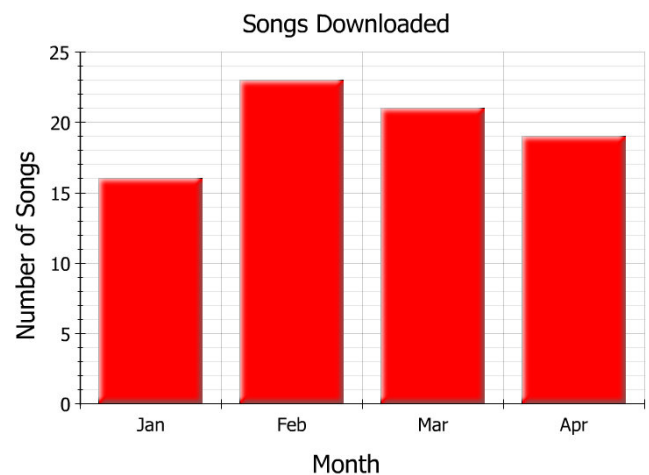
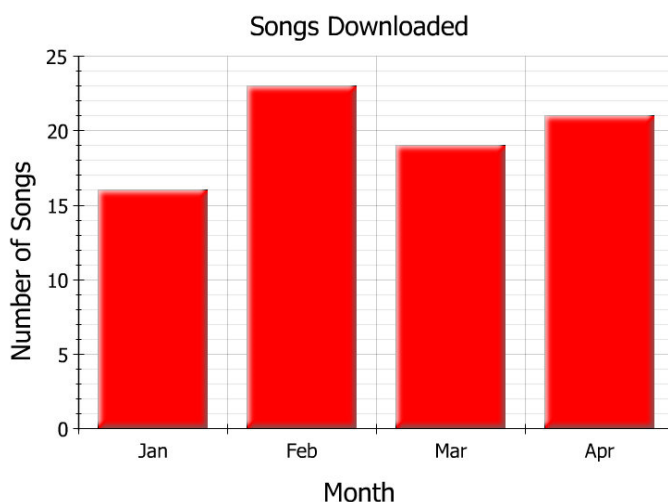


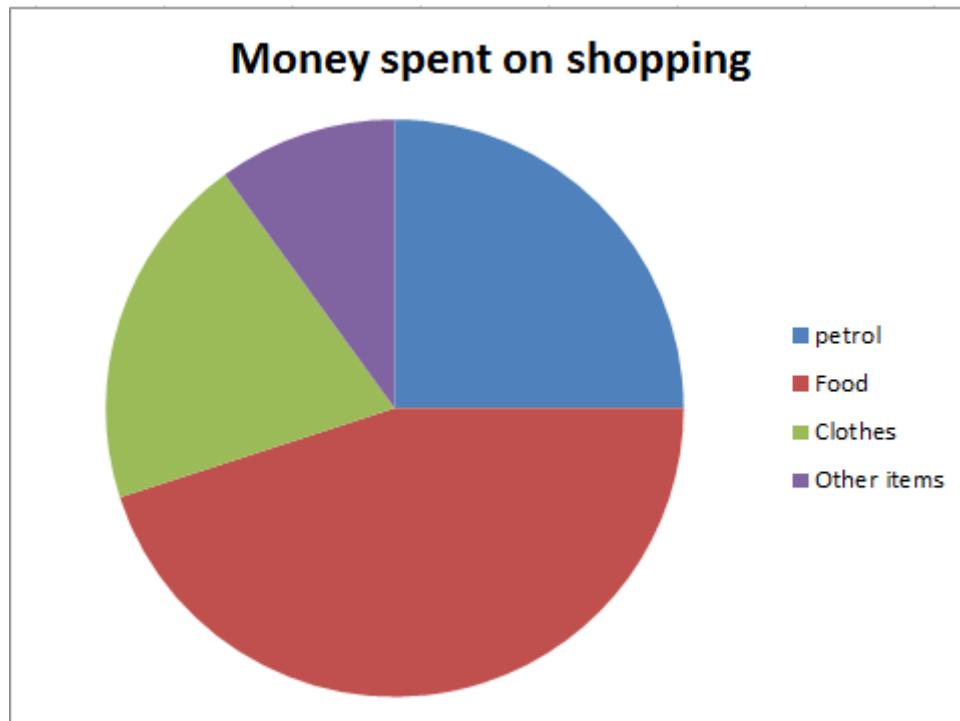
Chart C



- 44) Keira goes shopping at a supermarket.

The pie chart below shows information about the money she spent on petrol, clothes, food and other items.

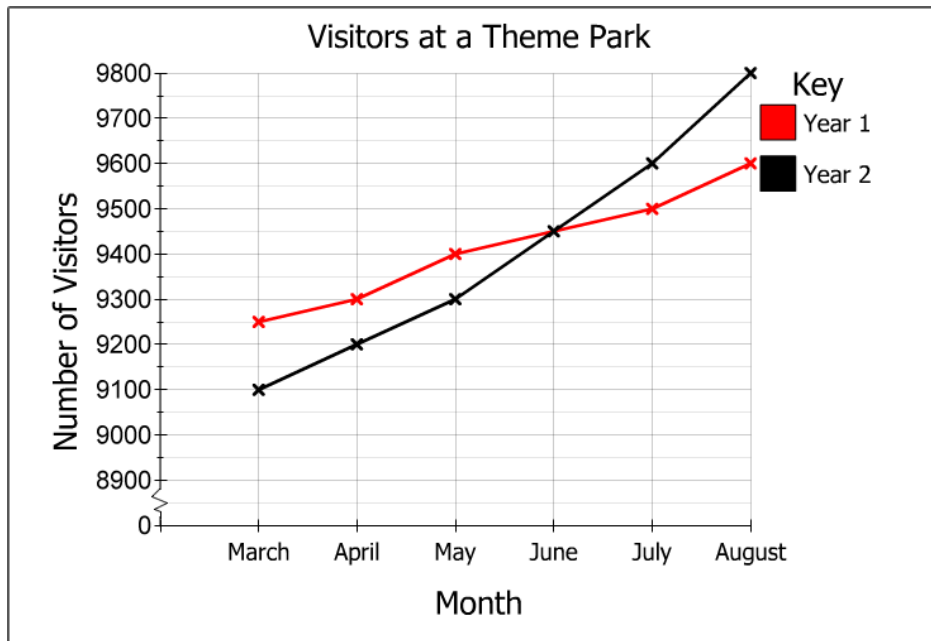
What fraction did she spend on petrol?



- 45) She spent £30 on petrol. In total how much money did she spend?



- 46) The graph below shows the number of visitors at a theme park.



How many more visitors **in total** went to the park in June, July and August in Year 2 than in Year 1?

- 47) Jack is in hospital and his temperature is recorded every hour one morning.

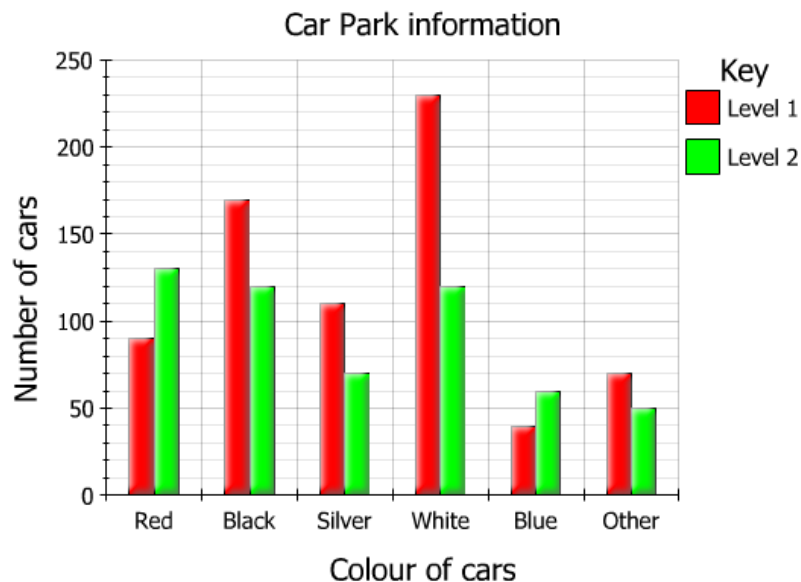
Time	Temperature
06:00	40.0
07:00	40.0
08:00	39.5
09:00	39.0
10:00	38.5
11:00	38.0
12:00	38.0

Which is the best type of chart to use to represent this information?

- Scatter diagram
- Pictogram
- Pie chart
- Line graph
- Tally chart
- Bar chart

- 48) Jack's wife is coming to visit him and parks in the hospital car park.  
The bar chart below shows some information about the cars parked in the car park.

How many more white than silver cars are parked in the hospital car park?



- 49) Ben works part-time in a warehouse. His boss is going to send one employee home early as there is little work. Of the 56 employees, 21 are part-time.

If the boss picks one employee at random, what are the chances it will be a part-time employee? Give your answer in its simplest form.

- 50) There are 4 red cars and 6 blue cars parked in the car park at Ben's workplace. On a transporter lorry travelling alongside Ben on the motorway there are 5 cars, 3 of which are red. In which situation is red most likely?

In the car park / On the transporter

- 51) Ben is travelling home to Birmingham on the M1 and M42. Both motorways have road works.

He has a fifty-fifty chance of getting delayed on the M42 and a 75% chance of being delayed on the M1.

What are the chances that he will **not** be delayed on his journey?

