

Year 6 Maths

Week 12 Lesson 3

Statistics – Pie Charts with Percentages



Statistics – Draw Line Graphs

In this lesson you will:

- apply your understanding of calculating percentages of amounts to interpret pie charts;
- decide on the most appropriate scales and intervals to use depending on the data they are representing.



Arithmetic Starter

Level 1

$$5782 - 498 =$$

$$3792 - 585 =$$

$$5603 - 358 =$$

$$2984 - 349 =$$

$$6119 - 452 =$$

$$5072 - 493 =$$

$$3737 - 398 =$$

Level 2

$$97 + 10 =$$

$$197 \times 3 =$$

$$4.3 + 3.1 =$$

$$42 \times 2 =$$

$$616 + 742 =$$

$$6 \times 6 =$$

$$403 - 6 =$$

$$3.4 + 6.02 =$$

$$2 \times 6 \times 4 =$$

Level 3

$$\frac{1}{5} + \frac{3}{5} =$$

$$330 \div 11 =$$

$$13.6 \times 10 =$$

$$4^2 =$$

$$70,000 - 500 =$$

$$720 \div 9 =$$

$$630 \div 9 =$$

$$40\% \text{ of } 1,600 =$$

$$2.23 \times 4 =$$

Arithmetic Starter

Level 1

$$5782 - 498 = 5284$$

$$3792 - 585 = 3207$$

$$5603 - 358 = 5245$$

$$2984 - 349 = 2635$$

$$6119 - 452 = 5667$$

$$5072 - 493 = 4579$$

$$3737 - 398 = 3339$$

Level 2

$$97 + 10 =$$

$$107$$

$$197 \times 3 =$$

$$591$$

$$4.3 + 3.1 =$$

$$7.4$$

$$42 \times 2 =$$

$$84$$

$$616 + 742 =$$

$$1,358$$

$$6 \times 6 =$$

$$36$$

$$403 - 6 =$$

$$397$$

$$3.4 + 6.02 =$$

$$9.42$$

$$2 \times 6 \times 4 =$$

$$48$$

Level 3

$$\frac{1}{5} + \frac{3}{5} =$$

$$\frac{4}{5}$$

$$330 \div 11 =$$

$$30$$

$$13.6 \times 10 =$$

$$136$$

$$4^2 =$$

$$16$$

$$70,000 - 500 =$$

$$69,500$$

$$720 \div 9 =$$

$$80$$

$$630 \div 9 =$$

$$70$$

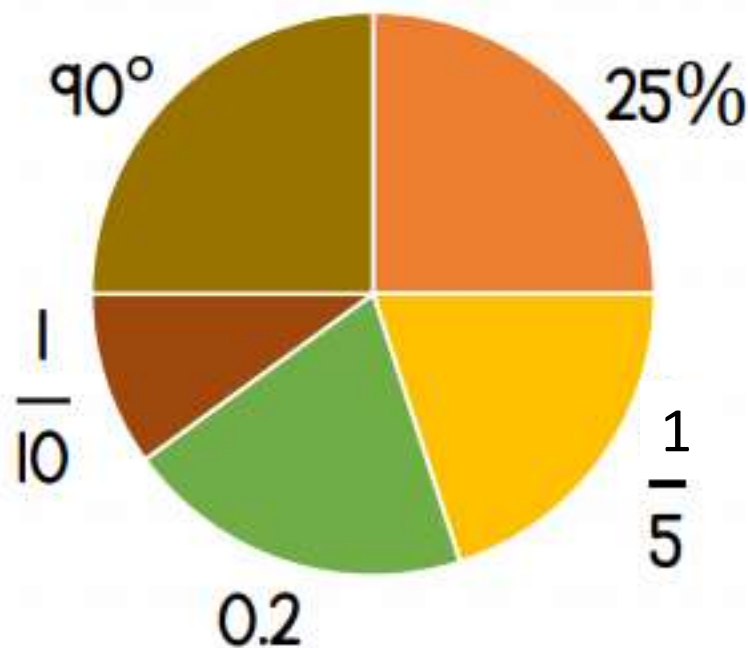
$$40\% \text{ of } 1,600 =$$

$$640$$

$$2.23 \times 4 =$$

$$8.92$$

I can use decimals, percentages, fractions or degrees to describe the sections of a pie chart.



True

They all describe parts of the whole circle.

Introduction

Calculate these percentages of quantities.

Find 25% of:

60

84

56

168

Find 10% of:

70

150

690

125

Find 5% of:

20

140

280

360

Introduction

Calculate these percentages of quantities.

To find 25% we need to divide by 4.

Find 25% of:

60
15

84
21

56
14

168
42

To find 10% we need to divide by 10.

Find 10% of:

70
7

150
15

690
69

125
12.5

To find 5% we need to divide by 20. A good way to divide by 20 is to divide by 10 then divide by 2.

Find 5% of:

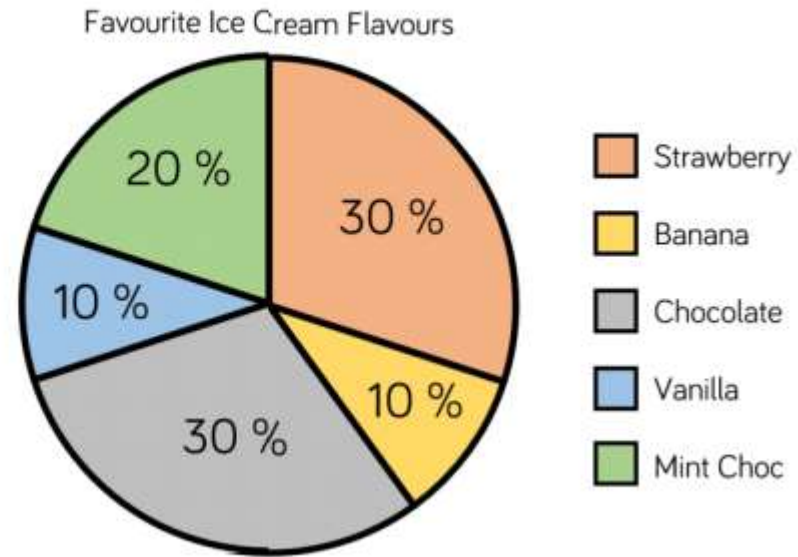
20
1

140
7

280
14

360
18

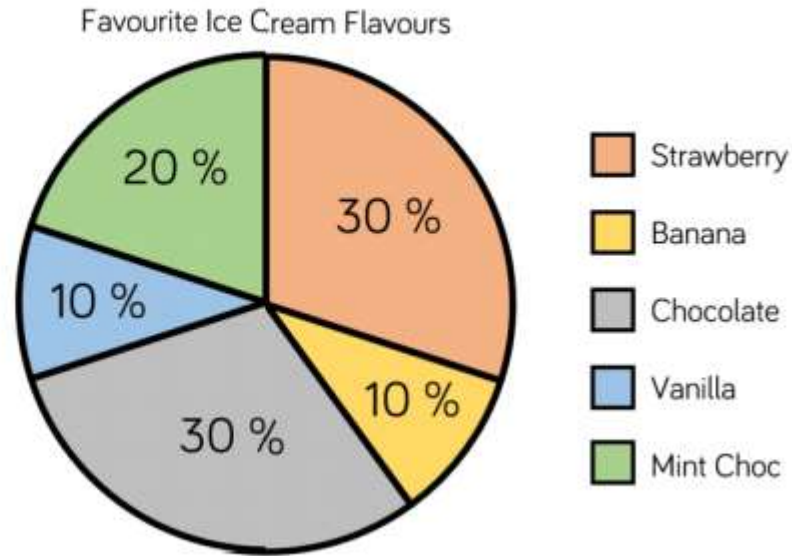
150 children voted for their favourite ice cream flavours. Here are their results:



How many people voted for Vanilla?

How many more people voted for Chocolate than Mint Chocolate Chip?

150 children voted for their favourite ice cream flavours. Here are their results:



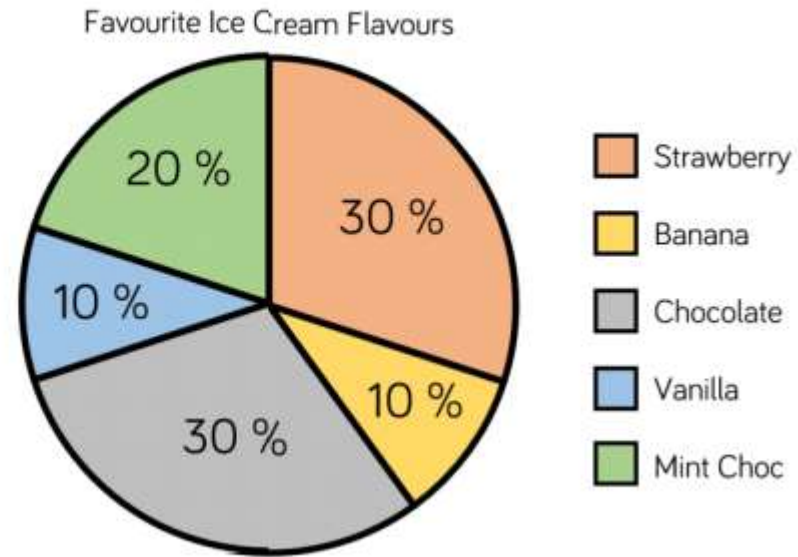
How many people voted for Vanilla?

10% of the children voted for Vanilla as their favourite ice cream flavour. 10% of 150 is 15.

How many more people voted for Chocolate than Mint Chocolate Chip?

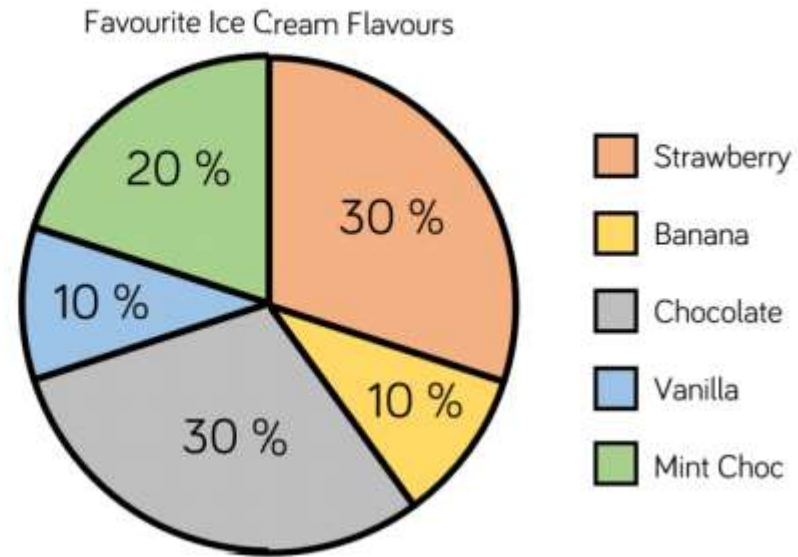
30% voted for Chocolate and 20% voted for Mint Chocolate Chip. So 10% more people voted for Mint Choc. 10% of 150 children is 15 children.

150 children voted for their favourite ice cream flavours. Here are their results:



How many people chose Chocolate, Banana and Vanilla altogether?

150 children voted for their favourite ice cream flavours. Here are their results:



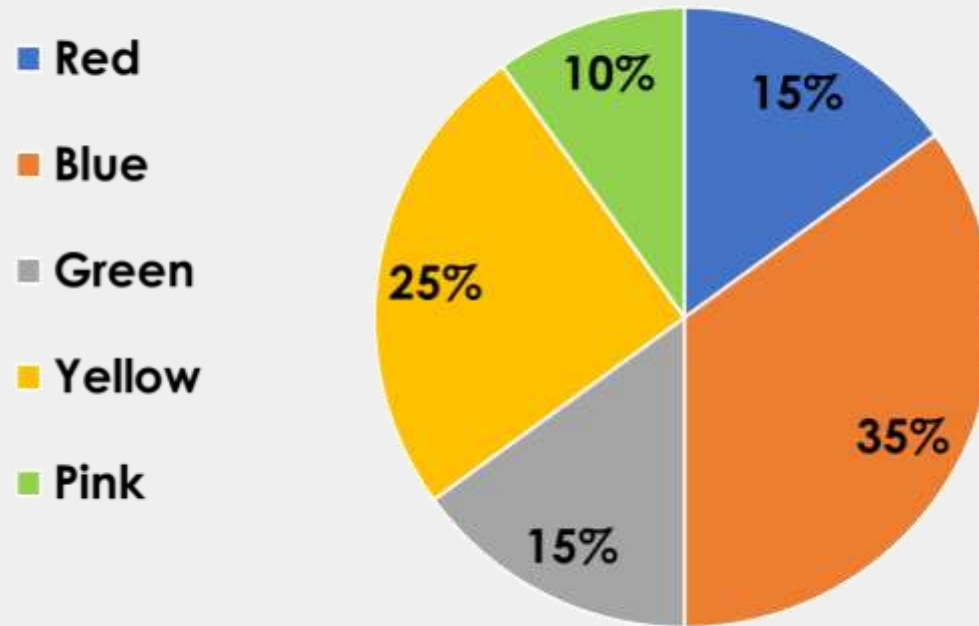
How many people chose Chocolate, Banana and Vanilla altogether?

$10\% + 30\% + 10\% = 50\%$. 50% of 150 is 75.

Varied Fluency 1

**60 children voted for their favourite colour.
Here are the results:**

Favourite Colour

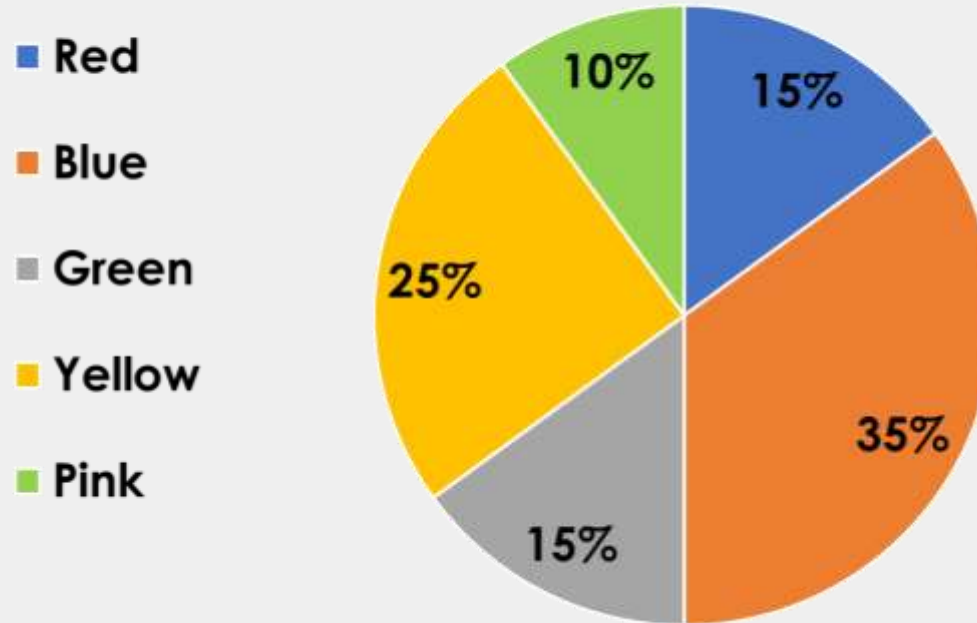


How many voted for red?

Varied Fluency 1

60 children voted for their favourite colour.
Here are the results:

Favourite Colour



How many voted for red?

9

10% of 60 is 6.
5% of 60 is 3.

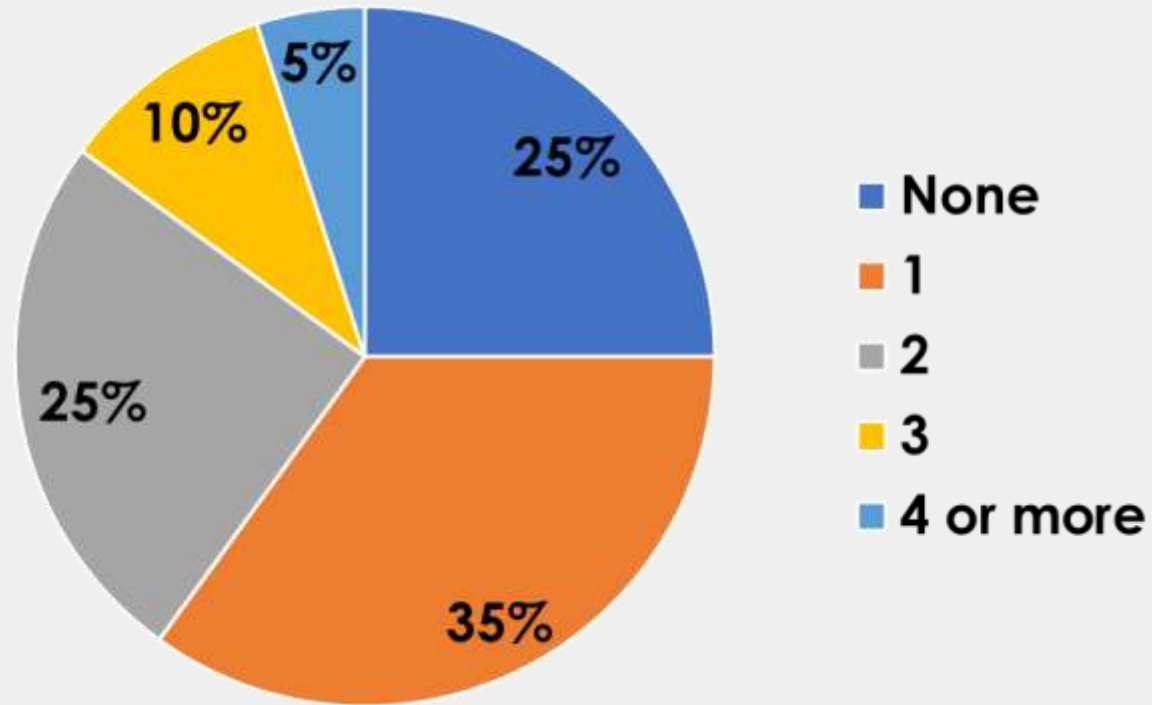
So 15% is 6 +
3.

Varied Fluency 2

200 children were asked how many siblings they have.

Here are the results:

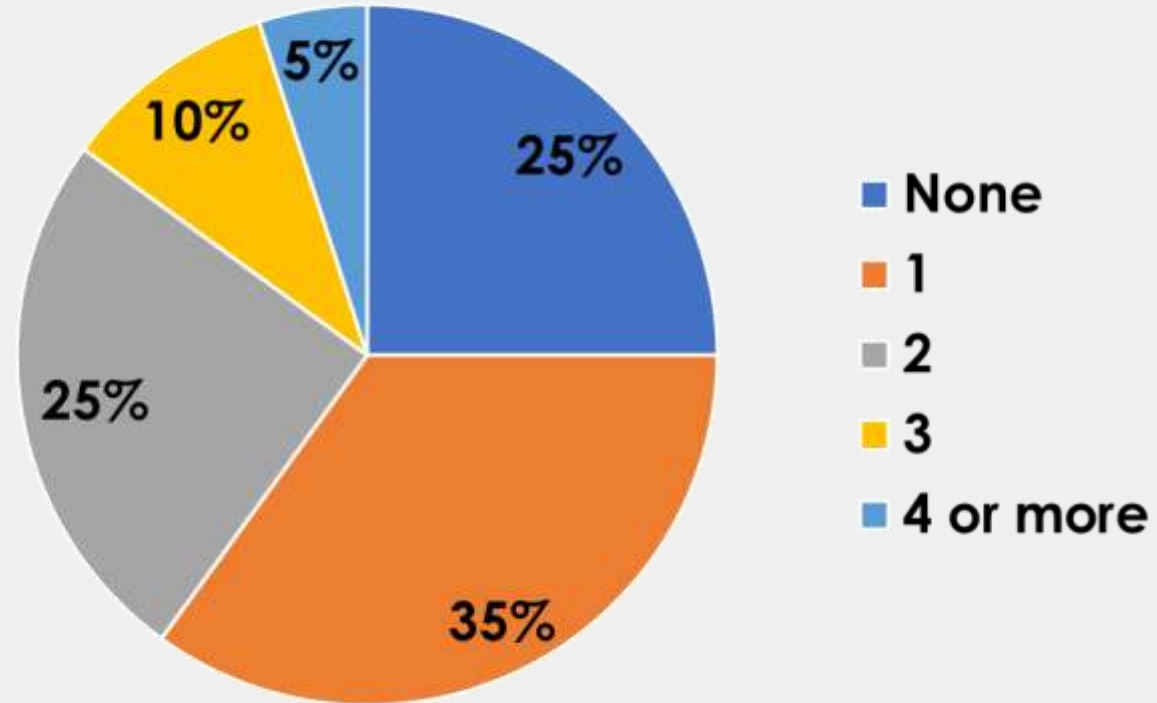
Number of siblings



How many more children have two siblings than three?

Varied Fluency 2

**200 children were asked how many siblings they have.
Here are the results:
Number of siblings**



How many more children have two siblings than three?
30

10% of the children have 3 siblings; 25% of the children have 2 siblings. So 15% more.

15% of 200 is 30.

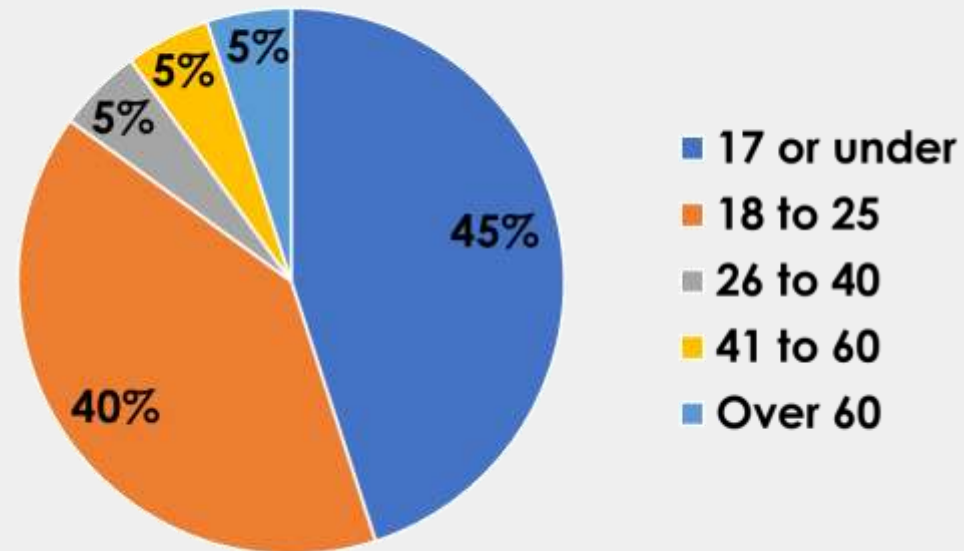
10% of 200 is 20.
5% of 200 is 10.

So 15% is $20 + 10$.

Varied Fluency 3

**120 people were asked their age.
Here are the results:**

Ages



How many were in each age bracket?

All the percentages are multiples of 5, so let us work out 5% of 120 first. 120 divide by 20 is 6.

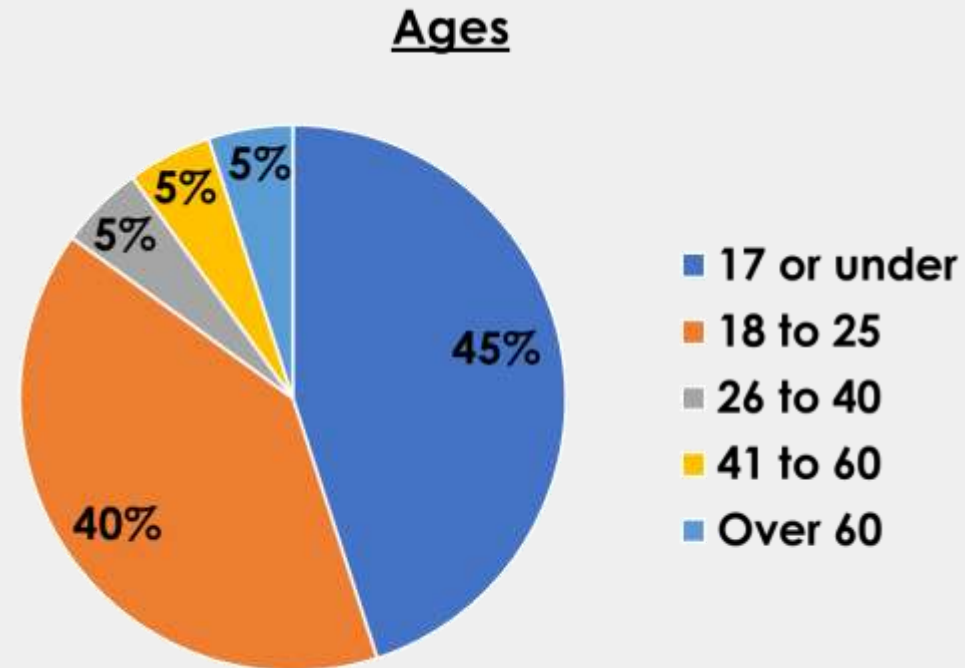
So, 45% of 120 = 6×9
(as $5 \times 9 = 45$)

So, 40% of 120 = 6×8
(as $5 \times 8 = 40$)

And we already know what 5% is!

Varied Fluency 3

**120 people were asked their age.
Here are the results:**



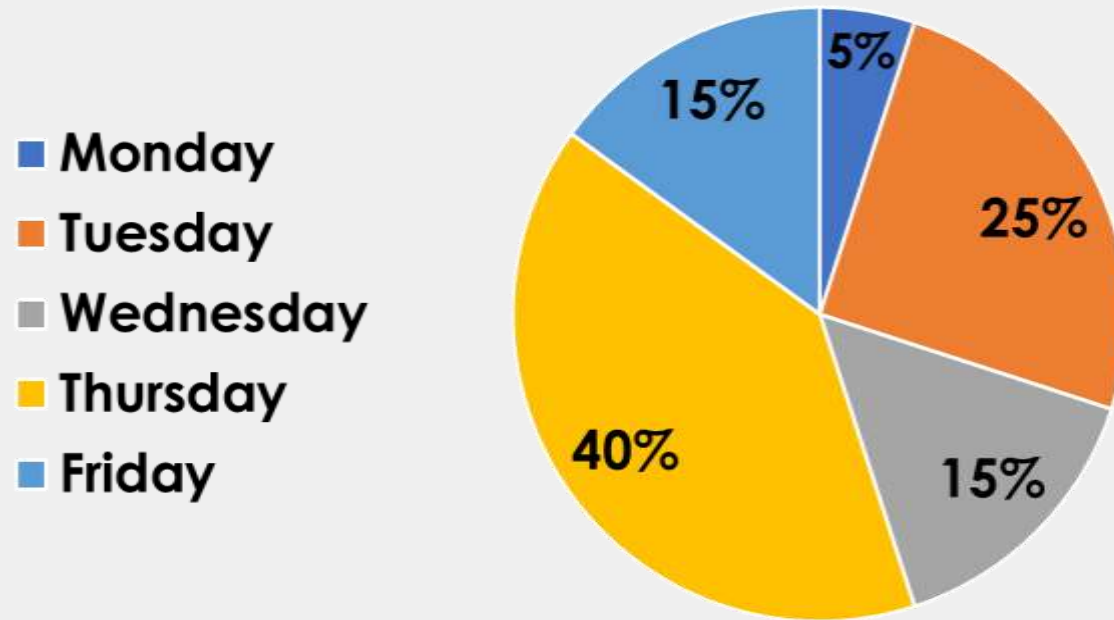
How many were in each age bracket?

17 or under – 54, 18 to 25 – 48, 26 to 40 – 6, 41 to 60 – 6, Over 60 – 6

Varied Fluency 4

If 30 people chose Friday, how many chose Thursday?

Favourite day at school



15% of the Pie chart is shaded in as Friday's colour.

If 15% of the whole is 30, then 1% is equivalent to 2 people.

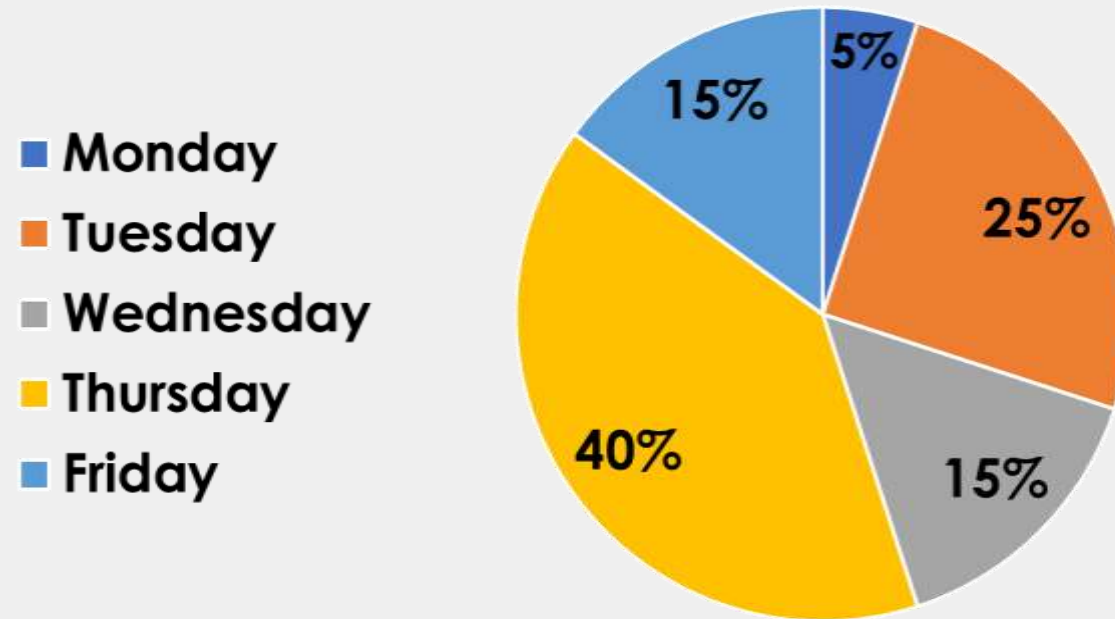
We can then use this to work out how many people chose Thursday as their favourite day at school.

40% chose Thursday. $40 \times 2 = 80$. So 80 people chose Thursday.

Varied Fluency 4

If 30 people chose Friday, how many chose Thursday?

Favourite day at school



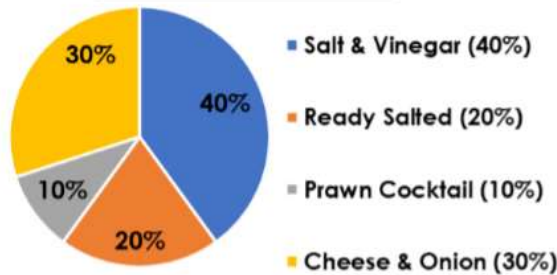
80

Independent Tasks – part i

Level 1

1a. 50 children voted for their favourite crisps. Here are the results:

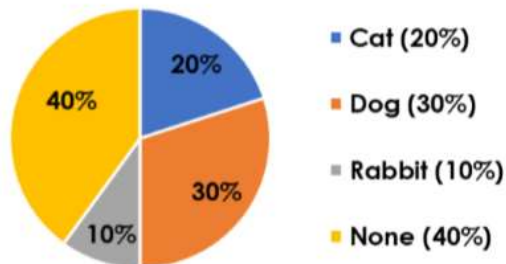
Favourite Crisps



How many voted for salt and vinegar? ★ D VF

2a. 150 children were asked what pet they have. Here are the results:

Pets

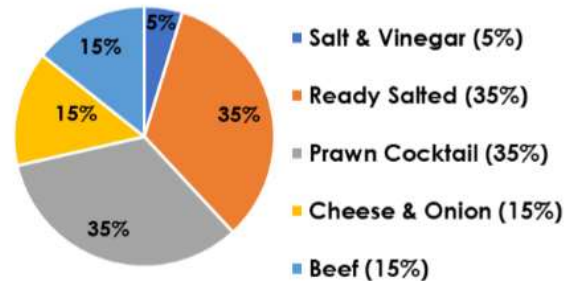


How many more children have no pets than have cats? ★ D VF

Level 2

5a. 60 children voted for their favourite crisps. Here are the results:

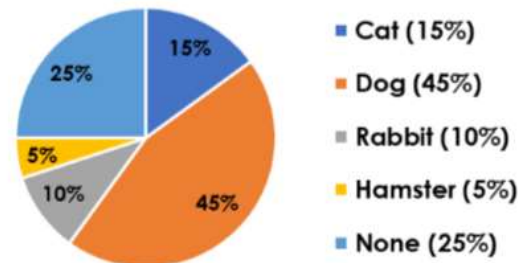
Favourite Crisps



How many voted for beef? ★ E VF

6a. 200 children were asked what pet they have. Here are the results:

Pets

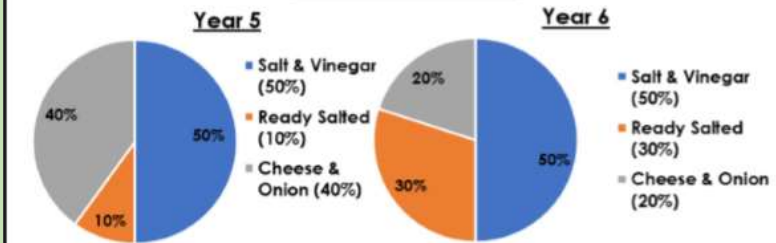


How many more children have dogs than cats? ★ E VF

Level 3

9a. 50 children in Year 5 and 50 in Year 6 were asked their favourite flavour of crisps.

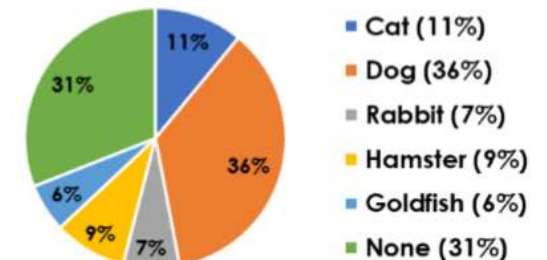
Favourite Crisps



How many chose ready salted? ★ GD VF

10a. 200 children were asked what pets they have. How many more had no pets than had goldfish, hamsters or rabbits?

Pets



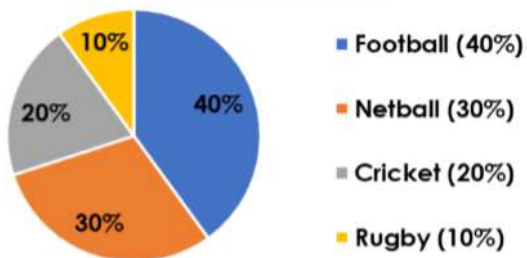
★ GD VF

Independent Tasks – part ii

Level 1

3a. 50 children were asked their favourite sport. Here are the results:

Favourite Sports

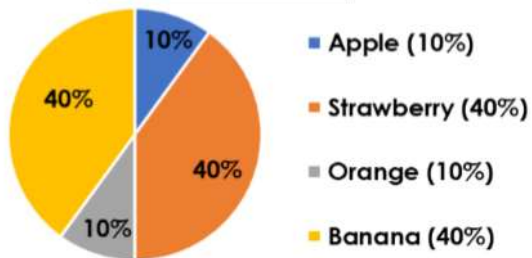


How many chose each sport?

VF

4a. If 5 people chose apples, how many chose strawberry?

Favourite Fruit

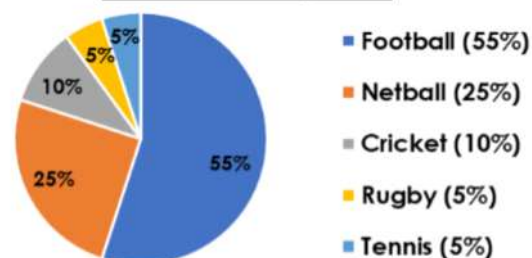


VF

Level 2

7a. 120 children were asked their favourite sport. Here are the results:

Favourite Sports

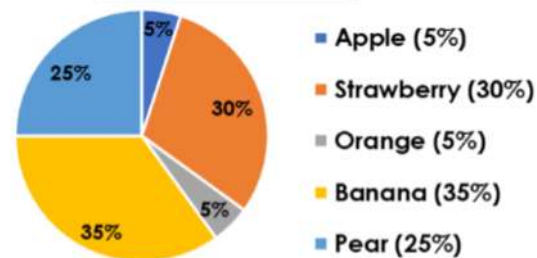


How many chose each sport?

VF

8a. If 2 people chose apples, how many chose strawberry?

Favourite Fruit

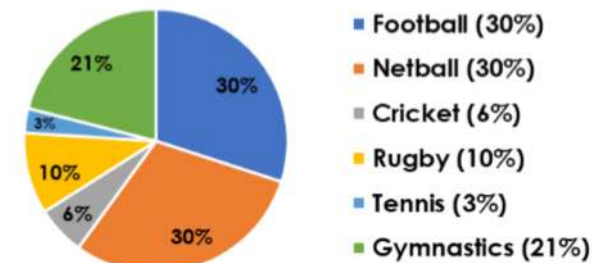


VF

Level 3

11a. 200 children were asked their favourite sport. Here are the results:

Favourite Sports

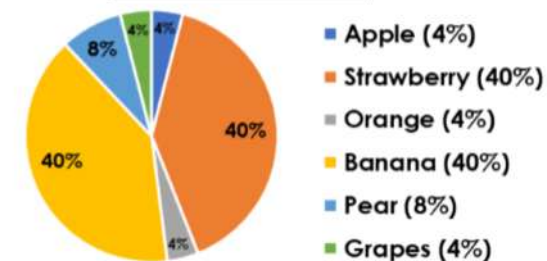


How many chose each sport?

VF

12a. If 2 people chose apple, how many chose banana?

Favourite Fruit



VF

Developing

1a. 20

2a. 30

3a. Football – 20, Netball – 15, Cricket – 10,
Rugby – 5

4a. 20

Expected

5a. 9

6a. 60

7a. Football – 66, Netball – 30, Cricket – 12,
Rugby – 6, Tennis – 6

8a. 12

Greater Depth

9a. 20

10a. 18

11a. Football – 60, Netball – 60,
Cricket – 12, Rugby – 20, Tennis – 6,
Gymnastics – 42

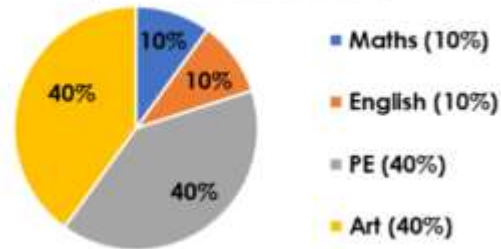
12a. 20

Independent Tasks – part iii

Level 1

1b. 50 children voted for their favourite lesson. Here are the results:

Favourite Lesson



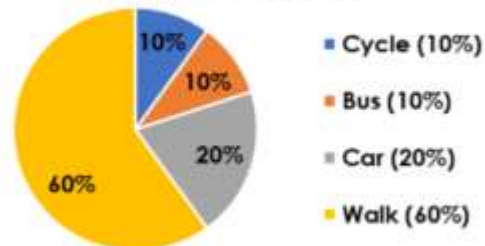
How many voted for maths?



VF

2b. 50 children were asked how they get to school. Here are the results:

Travel to School



How many more children walk than cycle?

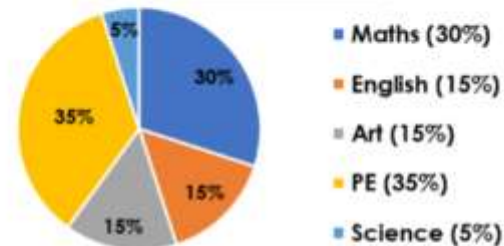


VF

Level 2

5b. 120 children voted for their favourite lesson. Here are the results:

Favourite Lesson



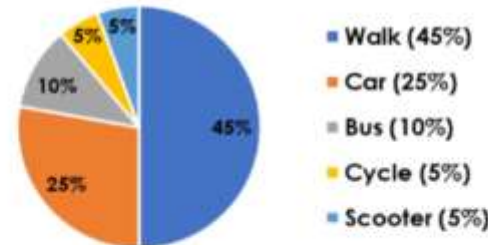
How many voted for PE?



VF

6b. 180 children were asked how they get to school. Here are the results:

Travel to School



How many more children walk than use a scooter?

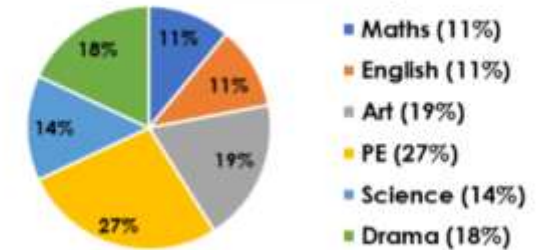


VF

Level 3

9b. 200 children were asked to name their favourite subjects.

Favourite Lesson



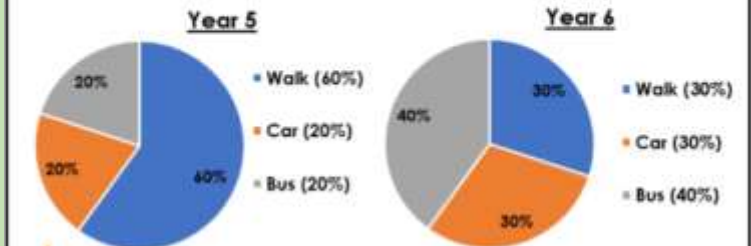
How many chose English or maths?



VF

10b. 50 children in Year 5 and 50 in Year 6 were asked how they get to school. How many more children walk than get the bus?

Travel to School



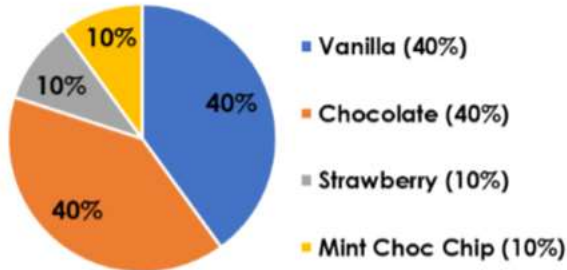
VF

Independent Tasks – part iv

Level 1

3b. 200 people voted for their favourite ice cream flavour. Here are the results:

Favourite Ice Cream Flavour

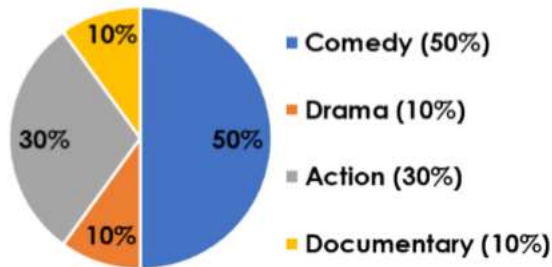


★ How many voted for each flavour?

VF

4b. If 20 people chose documentary, how many chose comedy?

Favourite Film Genre

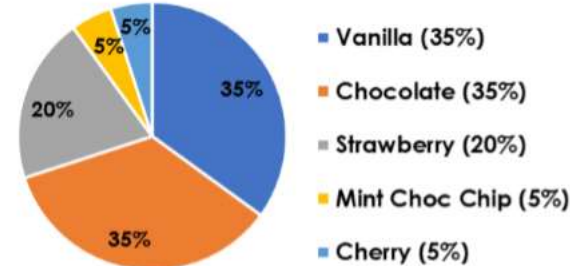


VF

Level 2

7b. 200 people voted for their favourite ice cream flavour. Here are the results:

Favourite Ice Cream Flavour

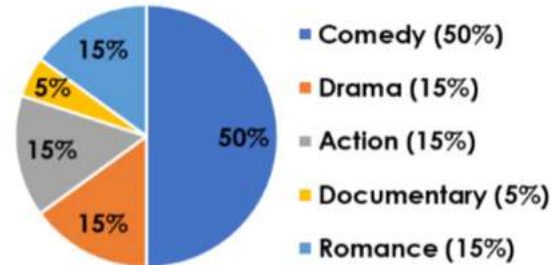


★ How many voted for each flavour?

VF

8b. If 10 people chose documentary, how many chose comedy?

Favourite Film Genre

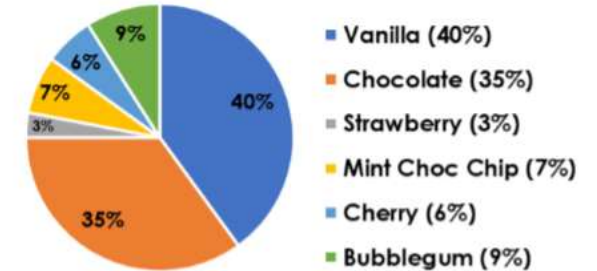


VF

Level 3

11b. 1,000 people voted for their favourite ice cream flavour. Here are the results:

Favourite Ice Cream Flavour

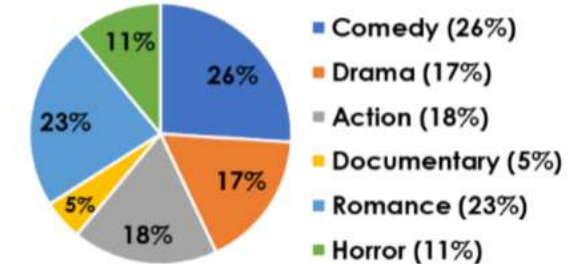


★ How many voted for each flavour?

VF

12b. If 10 people chose documentary, how many chose comedy?

Favourite Film Genre



VF

Developing

1b. 5

2b. 25

3b. Vanilla – 80, Chocolate – 80,
Strawberry – 20, Mint Choc Chip – 20

4b. 100

Expected

5b. 42

6b. 72

7b. Vanilla – 70, Chocolate – 70,
Strawberry – 40, Mint Choc Chip – 10,
Cherry – 10

8b. 100

Greater Depth

9b. 44

10b. 15

11b. Vanilla – 400, Chocolate – 350,
Strawberry – 30, Mint Choc Chip – 70,
Cherry – 60, Bubblegum – 90

12b. 52