

Estimating from a Sample

ANSWERS

1 Multiply both by the same number.

40 students at a school are asked how they get there. 12 of them walk. The school has 600 students. Estimate how many students at the school walk.

	Walk	Total
Sample	12	40
School	180	600

$\times 15$

2

A factory makes 2000 bolts in a day. 50 bolts are tested and 3 are faulty. Estimate how many of the 2000 bolts are faulty.

	Faulty	Total
Sample	3	50
Day	120	2000

$\times 40$

3

A crate holds 300 bags of crisps. In a sample of 20 bags, 7 are ready salted. Estimate how many bags in the crate are ready salted.

	Ready salted	Total
Sample	7	20
Crate	105	300

$\times 15$

4

A farmer has 240 sheep. A vet checks 30 of them and 4 need treatment. Estimate how many of the 240 sheep need treatment.

	Treatment	Total
Sample	4	30
Flock	32	240

$\times 8$

5

400 people watch a film. 25 of them are asked about it and 18 enjoyed it. Estimate how many of the 400 people enjoyed the film.

	Enjoyed	Total
Sample	18	25
Audience	288	400

$\times 16$

6

A town has 4800 adults. In a sample of 60 adults, 21 have a library card. Estimate how many adults in the town have a library card.

	Card	Total
Sample	21	60
Town	1680	4800

$\times 80$

7

A lake has about 1000 fish. A ranger nets 40 fish and 14 of them are perch. Estimate the number of perch in the lake.

	Perch	Total
Sample	14	40
Lake	350	1000

$\times 25$

Estimate 350

8 Notice the change!

750 shoppers visit a shop in a day. 50 are asked if they brought a bag and 32 say yes. Estimate how many of the 750 shoppers did not bring a bag.

	No bag	Total
Sample	18	50
Day	270	750

$\times 15$

50 - 32 = 18

Estimate 270

Estimating from a Sample further practice

ANSWERS

9

A hotel had 600 guests last month. 40 of them filled in a survey and 26 said they would come back. Estimate how many of the 600 guests would come back.

$600 \div 40 = 15$, and 26×15

Estimate 390

10

50 visitors to a zoo were asked to choose their favourite animal. The bar chart shows the results. On a busy day the zoo has 2000 visitors. Estimate how many of them would choose the penguins.

$2000 \div 50 = 40$, and 18×40

Estimate 720

11

A ranger checks 30 trees in a forest and finds that 4 are diseased. From this she estimates that 120 trees in the forest are diseased. Estimate how many trees there are in the forest.

$120 \div 4 = 30$, and 30×30

Estimate 900

12

A shop asked a sample of 60 customers how they pay. The shop has 1500 customers a week. Estimate how many more customers a week pay by card than by cash.

Pays by	Card	Cash	Phone	Total
Shoppers	39	12	9	60

$1500 \div 60 = 25$, and $(39 - 12) \times 25$

Estimate 675

13

A festival sells 500 tickets. In a sample of 40 ticket holders, 14 are camping. Estimate how many of the 500 ticket holders are camping.

$\frac{14}{40} = \frac{7}{20}$, and $500 \div 20 \times 7$

Estimate 175

14

A town has 3000 workers. Amy asks 50 of them and 12 cycle to work. Ben asks 50 others and 18 cycle to work. Use both samples together to estimate how many of the 3000 workers cycle to work.

30 out of 100, and $3000 \div 100 = 30$

Estimate 900

15

A village has 4000 people. Kai asks 10 people and 3 have a dog. Lily asks 200 people and 46 have a dog. Work out both estimates for the number of people with a dog. Whose estimate is more reliable? Why?

Kai 1200

Lily 920

Answer Lily's: her sample is bigger

16

8000 people live in Jack's town. He asks 50 people outside a bike shop if they own a bike, and 35 say yes. (a) Estimate how many people in the town own a bike. (b) Explain why this estimate is likely to be too high.

(a) 5600

(b) people at a bike shop are more likely to own a bike