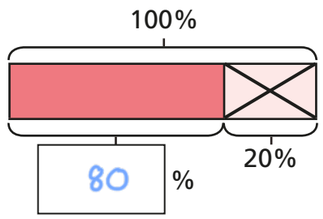
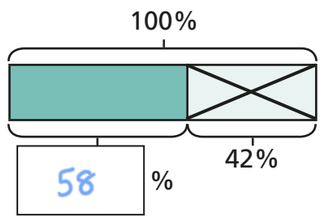
Calculate percentage increase and decrease using a multiplier

1 Work out the missing percentages.

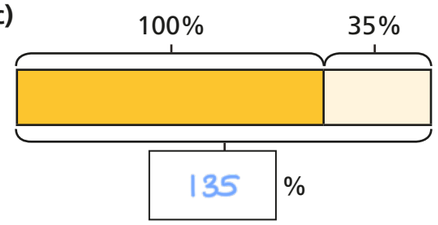
a)



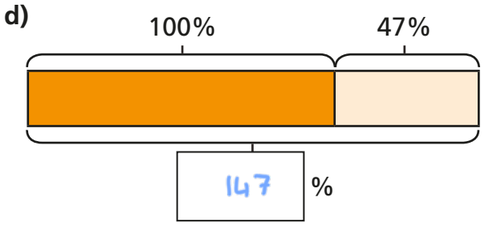
b)



c)



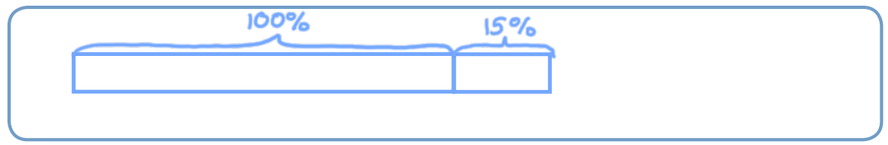
d)



2 Draw bar models to show these increases and decreases.

State the final percentage in each case.

a) Increase 100% by 15%

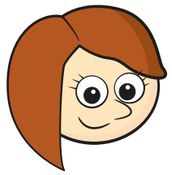


final percentage = 115 %

b) Decrease 100% by 15%

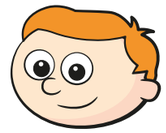
final percentage = 85 %

3



Rosie: 100% is the same as 1 whole, so if I increase by 5%, I now have 1.5

Ron: But 5% more than 100% is 105%, so the decimal should be 1.05



a) Who do you agree with? Ron

Explain your answer.

1·5 is 150%

b) Convert the percentages to decimals.

120%	102%	140%	199%
1·2	1·02	1·4	1·99

4 Write the decimal multiplier you would use to work out the increases and decreases.

a) increase by 40%: 1·4

b) decrease by 60%: 0·4

c) increase by 70%: 1·7

d) increase by 19%: 1·19

e) decrease by 19%: 0·81

f) decrease by 70%: 0·3

5 Tom and Nijah are increasing 60 by 30%

Tom's method	Nijah's method
10% of 60 = 6 So 30% of 30 = 3 × 6 = 18 So the answer is 60 + 18 = 78	100% + 30% = 130% 130% is the same as 1.3 So the answer is 60 × 1.3 = 78

Whose method do you prefer? Various answers

Talk about your choice with a partner.

Use your preferred method to complete the calculations.

a) increase 40 by 20% — 48

b) increase 80 by 45% — 116

c) increase 70 by 25% — 87·5

d) increase 3,000 by 5% — 3,150

e) increase 3,000 by 50% — 4,500

f) increase 3,000 by 55% — 4,650

6 Match the calculation to the decimal multiplier.

increase by 20%	× 0.98
increase by 2%	× 1.2
decrease by 20%	× 3
increase by 200%	× 0.8
decrease by 2%	× 1.02

7 **a)** Mr Ahmed earns £40,000 a year.

Work out his salary after a 15% pay rise.

£ 46,000

b) Ms Trent earns £45,000 a year.

Work out her salary after a 15% pay cut.

£ 38,250

c) Mr Xu invests £20,000 in a savings account.

After a year, his investment has grown by 3%.

Work out the value of his investment after 1 year.

£ 20,600

d) The price of a phone is £800

If the price drops by 18%, what is the new price?

£ 656

8 A shop's prices are increased by 30%.

Two weeks later, there is a sale and the prices are reduced by 30%.

Are the prices now the same, higher or lower than they were before the changes?

Discuss with a partner and justify your answer.