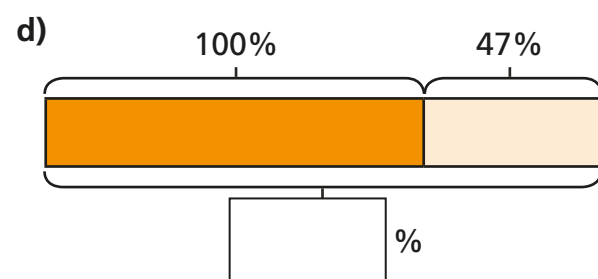
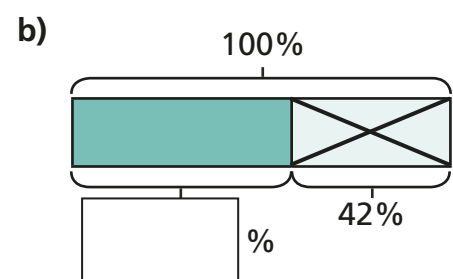
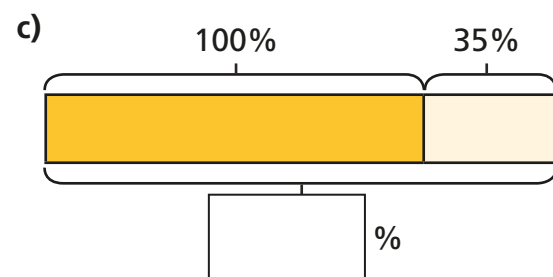
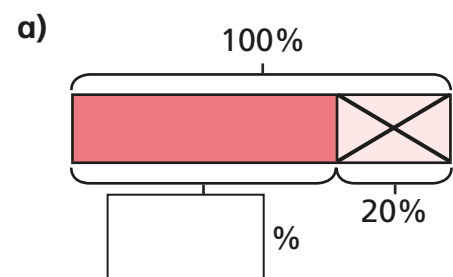


# Calculate percentage increase and decrease using a multiplier

1 Work out the missing percentages.



2 Draw bar models to show these increases and decreases.  
State the final percentage in each case.

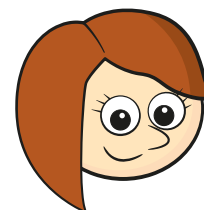
a) Increase 100% by 15%

final percentage =  %

b) Decrease 100% by 15%

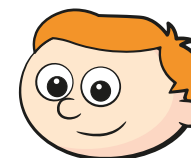
final percentage =  %

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? \_\_\_\_\_  
Explain your answer.

b) Convert the percentages to decimals.

120%

102%

140%

199%

4

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

a) increase by 40%

c) increase by 70%

e) decrease by 19%

b) decrease by 60%

d) increase by 19%

f) decrease by 70%

- 5 Tom and Nijah are increasing 60 by 30%

**Tom's method**

10% of 60 = 6  
So 30% of 60 =  $3 \times 6 = 18$   
So the answer is  $60 + 18 = 78$

**Nijah's method**

$100\% + 30\% = 130\%$   
130% is the same as 1.3  
So the answer is  $60 \times 1.3 = 78$

Whose method do you prefer? \_\_\_\_\_

Talk about your choice with a partner.

Use your preferred method to complete the calculations.

- a) increase 40 by 20%  
b) increase 80 by 45%  
c) increase 70 by 25%  
d) increase 3,000 by 5%  
e) increase 3,000 by 50%  
f) increase 3,000 by 55%

- 6 Match the calculation to the decimal multiplier.

|                  |               |
|------------------|---------------|
| increase by 20%  | $\times 0.98$ |
| increase by 2%   | $\times 1.2$  |
| decrease by 20%  | $\times 3$    |
| increase by 200% | $\times 0.8$  |
| decrease by 2%   | $\times 1.02$ |

- 7 a) Mr Ahmed earns £40,000 a year.  
Work out his salary after a 15% pay rise.

£

- b) Ms Trent earns £45,000 a year.  
Work out her salary after a 15% pay cut.

£

- 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.

£

- d) The price of a phone is £800  
If the price drops by 18%, what is the new price?

£

- 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.

