

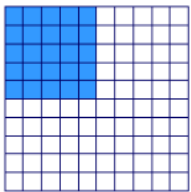
# BOOKLET 7

## Year 7

# Percentages



## Expressing percentages of (lesson 1)

<p><b>Percentages</b></p> <p>A percentage is just a special type of fraction.</p> <p>25% means 25 parts per hundred</p> <p>or <math>\frac{25}{100} = \frac{1}{4} = 0.25</math></p> 	<p><u>Question 1 examples</u></p> <p>a) <math>5/10 \times 100 = 50\%</math></p> <p>b) <math>5/20 \times 100 = 25\%</math></p> <p>c) <math>7/10 \times 100 = 70\%</math></p> <p>d) <math>27/50 \times 100 = 54\%</math></p> <p>Etc.....</p>
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### If you are stuck on this- watch the video

<https://corbettmaths.com/2012/08/21/expressing-one-quantity-as-a-percentage-of-another/>

Question 1:

- |   |   |
|---|---|
| (a) Write £5 as a percentage of £10         | (b) Write 5cm as a percentage of 20cm     |
| (c) Write 7 days as a percentage of 10 days | (d) Write 27 as a percentage of 50        |
| (e) Write 3g as a percentage of 20g         | (f) Write 4m as a percentage of 5m        |
| (g) Write 164 as a percentage of 200        | (h) Write 130ml as a percentage of 1000ml |

Question 2:

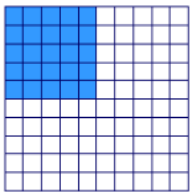
- |  |  |
|--|--|
| (a) Write 6 out of 8 marks as a percentage | (b) Write 10kg as a percentage of 40kg |
| (c) Write 22 as a percentage of 40         | (d) Write \$15 as a percentage of \$75 |
| (e) Write £21 as a percentage of £30       | (f) Write €18 as a percentage of €40   |
| (g) Write 20p as a percentage of £1        | (h) Write 60cm as a percentage of 2m   |

Question 3:

- |  |   |
|--|---|
| (a) Write 3 as a percentage of 8             | (b) Write 13 out of 200 as a percentage |
| (c) Write 7cm as a percentage of 40cm        | (d) Write \$5 as a percentage of \$16   |
| (e) Write 19 marks out of 32 as a percentage | (f) Write 20 out of 30 as a percentage  |



## Expressing percentages worded questions (lesson 2)

<p><b>Percentages</b></p> <p>A percentage is just a special type of fraction.</p> <p>25% means 25 parts per hundred</p> <p>or <math>\frac{25}{100} = \frac{1}{4} = 0.25</math></p> 	<p><u>Question 1 examples</u></p> <p>e) <math>5/10 \times 100 = 50\%</math></p> <p>f) <math>5/20 \times 100 = 25\%</math></p> <p>g) <math>7/10 \times 100 = 70\%</math></p> <p>h) <math>27/50 \times 100 = 54\%</math></p> <p>Etc.....</p>
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**If you are stuck on this- watch the video**

<https://corbettmaths.com/2012/08/21/expressing-one-quantity-as-a-percentage-of-another/>

Question 1: Kristina receives £5 from her Grandmother.  
She gives £1 to her sister.  
What percentage of the £5 did she give to her sister?

Question 2: For every 50 fans at an ice hockey match between Belfast and Cardiff,  
20 of the fans support Cardiff.  
(a) Work out 20 as a percentage of 50.

1000 fans attend the match between Belfast and Cardiff.  
(b) How many Cardiff fans attend the match?

Question 3: Danny scored 13 out of 20 in a quiz.



(a) Work out the percentage of questions Danny answered correctly.  
(b) Work out the percentage of questions Danny answered incorrectly.

Question 4: Jake brings 400 cupcakes to a school fête.  
He sells 350 of the cupcakes.  
Jake says that he has sold over 85% of the cupcakes.



Is Jake correct?

Question 5: A cereal bar weighs 24g.  
The cereal bar contains 3.8g of protein.  
Work out what percentage of the cereal bar is protein.



## Percentages of amounts- non- calculator (lesson 3)

**Simple Percentages**

30%

**Remember:**  
30% means **30 out of 100**

To find 30% of any quantity you simply find 10% first then multiply by 3.

Example 1: Find 30% of £64

$10\% = \text{£}6.40$   
 $30\% = 3 \times \text{£}6.40$   
 $= \text{£}19.20$

Example 2: Find 30% of 350 kg

$10\% = 35 \text{ kg}$   
 $30\% = 3 \times 35 \text{ kg}$   
 $= 105 \text{ kg}$

Always try to do these type of percentage problems in your head before resorting to pencil and paper.

If you can work out 10%.

You can work out 20%, 5%, and 1%

You can work out 25%, 50% and 75%

### Example

To work out 61% we could

Find 10% then find 50% then find 1% and add them all together.

### If you are stuck on this- watch the video

<https://corbettmaths.com/2012/08/20/percentages-of-amounts-non-calculator/>

Question 1: Work out the following

- |                 |                       |                    |                   |
|-----------------|-----------------------|--------------------|-------------------|
| (a) 10% of 70m  | (b) 25% of 16 seconds | (c) 10% of 400kg   | (d) 50% of 26g    |
| (e) 75% of 40ml | (f) 1% of £300        | (g) 25% of 36 days | (h) 50% of 9 days |
| (i) 75% of 24p  | (j) 25% of £18        | (k) 1% of \$6300   | (l) 10% of £7     |
| (m) 1% of 60m   | (n) 75% of 8 miles    | (o) 1% of 80kg     | (p) 50% of 1.6km  |

Question 2: Work out the following

- |                  |                       |                     |                  |
|------------------|-----------------------|---------------------|------------------|
| (a) 20% of 30km  | (b) 5% of £60         | (c) 2% of 600m      | (d) 30% of 70p   |
| (e) 3% of \$9000 | (f) 40% of 75 seconds | (g) 15% of 90 hours | (h) 5% of 14kg   |
| (i) 60% of 30km  | (j) 30% of £40        | (k) 70% of 900cm    | (l) 20% of 13cm  |
| (m) 11% of 420m  | (n) 26% of 4000m      | (o) 55% of £8       | (p) 15% of 340kg |

Question 3: Work out the following

- |                   |                    |                     |                       |
|-------------------|--------------------|---------------------|-----------------------|
| (a) 35% of £800   | (b) 6% of 160g     | (c) 23% of 330cm    | (d) 52% of 910m       |
| (e) 61% of 1400   | (f) 7% of 640GB    | (g) 45% of 350g     | (h) 80% of 450 people |
| (i) 90% of 1250ml | (j) 76% of £80,000 | (k) 85% of 90 hours | (l) 12% of £6         |
| (m) 6% of £20     | (n) 11% of 6m      | (o) 28% of 3km      | (p) 71% of 4 tonnes   |









## Percentage of amounts worded (lesson 4)

If you can work out 10%.

You can work out 20%, 5%, and 1%

You can work out 25%, 50% and 75%

### Example

To work out 61% we could

Find 10% then find 50% then find 1% and add them all together.

## If you are stuck on this- watch the video

<https://corbettmaths.com/2012/08/20/percentages-of-amounts-non-calculator/>

Apply

Question 1: A primary school has 212 students.  
50% of the students are boys.  
How many of the students are boys?

Question 2: There are 800 fans at a rugby match between Armagh and Malone.  
30% of the fans support Malone.  
How many fans support Malone?



Question 3: Hannah is paid £280.  
She spends 30% on her rent, 25% on food and bills and saves the rest.

- (a) How much does Hannah spend on rent?
- (b) How much does Hannah spend on food and bills?
- (c) How much does Hannah save?

Question 4: There are 220 students in Year 7.  
15% cycle to school.  
60% are driven to school.  
The rest walk to school.

- (a) How many students cycle to school?
- (b) How many students are driven to school?
- (c) How many students walk to school?

Question 5: Fredrick is an estate agent in New York and earns 5% commission on every property sold. How much will he receive if he sells a flat for \$830,000?



**Lesson 1 Answers**

Question 1

- |         |         |
|---------|---------|
| (a) 50% | (b) 25% |
| (c) 70% | (d) 54% |
| (e) 15% | (f) 80% |
| (g) 82% | (h) 13% |

Question 2

- |         |         |
|---------|---------|
| (a) 75% | (b) 25% |
| (c) 55% | (d) 20% |
| (e) 70% | (f) 45% |
| (g) 20% | (h) 30% |

Question 3

- |             |               |
|-------------|---------------|
| (a) 37.5%   | (b) 6.5%      |
| (c) 17.5%   | (d) 31.25%    |
| (e) 59.375% | (f) 66.66...% |

**Lesson 2 Answers****Apply**

Question 1: 20%

Question 2: (a) 40% (b) 400

Question 3: (a) 65% (b) 35%

Question 4: Yes, he sold 87.5%

Question 5: 15.8333..%

**Lesson 3 Answers****Percentage of an amount (non-calc)****Workout****Question 1**

- |          |               |            |              |
|----------|---------------|------------|--------------|
| (a) 7m   | (b) 4 seconds | (c) 40kg   | (d) 13g      |
| (e) 30ml | (f) £3        | (g) 9 days | (h) 4.5 days |
| (i) 18p  | (j) £4.5      | (k) \$63   | (l) 70p      |
| (m) 60cm | (n) 6 miles   | (o) 80g    | (p) 0.8km    |

**Question 2:**

- |           |                |                |           |
|-----------|----------------|----------------|-----------|
| (a) 6km   | (b) £3         | (c) 12m        | (d) 21p   |
| (e) \$270 | (f) 30 seconds | (g) 13.5 hours | (h) 70g   |
| (i) 18km  | (j) £12        | (k) 630cm      | (l) 2.6cm |
| (m) 46.2m | (n) 1040m      | (o) £4.40      | (p) 51kg  |

**Question 3:**

- |            |             |                |                 |
|------------|-------------|----------------|-----------------|
| (a) £280   | (b) 9.6g    | (c) 75.9cm     | (d) 473.2m      |
| (e) 85.4   | (f) 44.8GB  | (g) 157.5g     | (h) 384 people  |
| (i) 1125ml | (j) £60,800 | (k) 76.5 hours | (l) 72p         |
| (m) £1.20  | (n) 66cm    | (o) 840m       | (p) 2.84 tonnes |

**Lesson 4 Answers****Apply****Question 1:**

106 boys

**Question 2:**

240

**Question 3:**

- (a) £84
- (b) £70
- (c) £126

**Question 4:**

- (a) 33
- (b) 132
- (c) 55

**Question 5:**

\$415,000