

Multiplying decimals by whole numbers

Use a calculator to work out these equations.

|   | A      | B      | C     | D     | E     |
|---|--------|--------|-------|-------|-------|
| 1 | 1.3    | 76     | 27.27 | 23    | 0.246 |
| 2 | 0.52   | 0.0046 | 82    | 406   | 16    |
| 3 | 48     | 2.9    | 71.3  | 0.707 | 13.31 |
| 4 | 18.052 | 0.84   | 43    | 0.8   | 64    |
| 5 | 38     | 0.202  | 0.9   | 28.8  | 0.68  |
| 6 | 12.4   | 37.82  | 208   | 0.925 | 55    |

The grid locations in the following equations refer to the numbers in the grid.

- $(3B) \times (4A)$  \_\_\_\_\_
- First do  $(2E) + (5B)$  and then  $\times (1B)$   
\_\_\_\_\_
- First do  $(6B) + (4D)$  and then  $\times (2C)$   
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- First do  $(4C) \times (2A)$  and then  $\times (5A)$   
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- $(5E) \times (6E)$  \_\_\_\_\_
- $(6B) \times (4D)$  \_\_\_\_\_
- First do  $(3E) + (1B)$  and then  $\times (4C)$   
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- First do  $(3D) + (2C)$  and then  $\times (1A)$   
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- First do  $(6A) + (2A)$  and then  $\times (4B)$   
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- $(3C) \times (5A)$  \_\_\_\_\_
- First do  $(1D) + (5E)$  and then  $\times (3B)$   
\_\_\_\_\_
- $(3D) \times (5A)$  \_\_\_\_\_
- $(3D) \times (2C)$  \_\_\_\_\_
- First do  $(1C) + (1E)$  and then  $\times (6A)$   
\_\_\_\_\_
- First do  $(6E) + (4B)$  and then  $\times (2A)$   
\_\_\_\_\_

Describing probabilities

This table shows different probabilities when one, two and three coins are tossed.

Some figures have been left out. Work out the answers for the spaces numbered 1–15.

Note: H = Head and T = Tail. Target means 'the desired result'.



| Toss    | Target       | Chance of getting the Target |               |         |
|---------|--------------|------------------------------|---------------|---------|
|         |              | Decimal                      | Fraction      | Percent |
| 1 coin  | H            | 0.5                          |               | ①       |
| 2 coins | H, T         | 0.5                          | ②             |         |
| 2 coins | T, T         | ③                            | $\frac{1}{4}$ | 25%     |
| 2 coins | at least 1 T | 0.75                         | $\frac{3}{4}$ | ④       |
| 3 coins | H, T, T      | 0.375                        |               | ⑤       |
| 3 coins | H, H, T      | 0.375                        | ⑥             |         |
| 3 coins | T, T, T      | ⑦                            |               | 12.5%   |
| 3 coins | T, H, T      | 0.375                        | ⑧             |         |
| 3 coins | at least 1 H | ⑨                            | $\frac{7}{8}$ |         |
| 3 coins | at least 2 T |                              | $\frac{1}{2}$ | ⑩       |
| 3 coins | T, H, H      | 0.375                        |               | ⑪       |
| 3 coins | H, T, H      | ⑫                            | $\frac{3}{8}$ |         |
| 3 coins | H, H, H      |                              | ⑬             | 12.5%   |
| 3 coins | at least 1 T | 0.875                        |               | ⑭       |
| 3 coins | at least 2 H |                              | $\frac{1}{2}$ | ⑮       |



Comparing lengths and areas

Perimeter is the distance around the outside of a two-dimensional shape.

Area is the amount of space inside a two-dimensional shape.

Write the missing values in the spaces below the table. Make sure you include the correct units in your answers.

| Height | Width | Perimeter | Area                |
|--------|-------|-----------|---------------------|
| 8 cm   | 6 cm  | 24 cm     | ①                   |
| ②      | 12 m  | 32 m      | 48 m <sup>2</sup>   |
| 6 mm   | ③     | 30 mm     | 54 mm <sup>2</sup>  |
| ④      | 6 cm  | 36 cm     | 72 cm <sup>2</sup>  |
| 3 km   | 18 km | ⑤         | 51 km <sup>2</sup>  |
| 9 m    | 7 m   | 32 m      | ⑥                   |
| ⑦      | 14 km | 48 km     | 140 km <sup>2</sup> |
| 17 mm  | 2 mm  | 38 mm     | ⑧                   |
| 2 m    | 21 m  | ⑨         | 42 m <sup>2</sup>   |
| 5 km   | ⑩     | 18 km     | 20 km <sup>2</sup>  |
| 6 cm   | 3 cm  | 18 cm     | ⑪                   |
| 7 mm   | 7 mm  | ⑫         | 49 mm <sup>2</sup>  |

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Score 2 points for each correct answer! SCORE /24 0-10 12-18 20-24

Problem Solving

Use a calculator to work out the answers.

- Lilly Hood walked 437.25 metres to her grandmother's cottage seventeen times. Then the incident with the wolf put an end to her grandmother and the walking. How much walking was that, to the nearest kilometre? Don't forget she also walked home.

- Mr B B Wolf, who still maintains his innocence in the incident at Lily Hood's grandmother's cottage, travelled to and from the courthouse thirty-nine times while he was on trial. The journey was 36.047 km, one way.

How much travel was that in total? Answer to the nearest kilometre.

- The three Piggy brothers, who were witnesses against Mr B B Wolf, said that once he scared them so much that they each ran 37.092 metres, which is a long way for a pig to run, to escape.

How far did the three brothers run altogether? Answer to the nearest metre.

- Wesley Weasel appeared in court as a character witness for Mr B B Wolf. He went to court seventeen times because he kept getting the date wrong. The court was 15.037 kilometres from Wesley's home.

To the nearest kilometre, how much did Wesley travel during those seventeen times?

The following questions are about a game of coin toss, using four coins.

- If the chance of getting four heads in the game is one out of sixteen, what is the chance of getting four tails?
- The coins were tossed seventy-two times and the combination of three heads and one tail came up eight times. That was exactly the probability for the number of times this combination would come up. What is that probability as a fraction?
- The coins were then tossed 144 times. If the probability of two heads and two tails coming up was a quarter, how many times would this combination have come up, according to probability?
- Since there is only one combination of coins that does not include at least one head (that is, four tails) and there are sixteen possible combinations, what is the chance of at least one head coming up, as a fraction?