

Week 9

This week in a nutshell:

Question 3 features expanding and factorising, and students should be reminded that they are representations of the distributive law; it's nice to refer back to the ideas of equality and identity at this point. Question 5 puts well used skills into a context that students should find familiar.

Question 1: Fraction of an amount

Question 2: Expanding and factorising

Question 3: Writing a product of primes

Question 4: Pythagoras' Theorem

Question 5: Calculating percentage change

The questions aim to develop and deepen understanding over the week. Due to the necessity of the topics covered this week, there is an emphasis on the interchangeability of command words, and language flexibility. It may be worth taking some extra time this week to make sure your students are developing their mathematical literacy.

This week's ideas for class discussion include:

Question 1: Fraction of an amount

- “Multiply by the top then divide by the bottom” or “divide by the bottom then multiply by the top”; do both approaches work? Why/not?
- Is either approach preferable?

Question 2: Expanding and factorising

- *reflect on previous learning*

Question 3: Writing a product of primes

- How far do you agree with the statement: “the product of primes is a number's address”?

Question 4: Pythagoras' Theorem

- How many Pythagorean triples can you find?
- How many Pythagorean triples do you think exist?

Question 5: Calculating percentage change

- Why do shops use percentages in sales, as opposed to fractions or decimals?

Week 9: Day 1

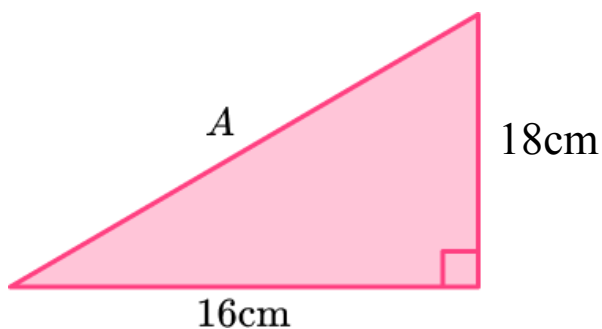
1) Find $\frac{3}{8}$ of 72.

2) Expand:

$$7(4 - 3x)$$

3) Express 30 as a product of primes.

4) Find the length of the side marked A .



5) A TV is featured in a sale. By what percentage has the price been reduced?



Week 9: Day 1 Answers

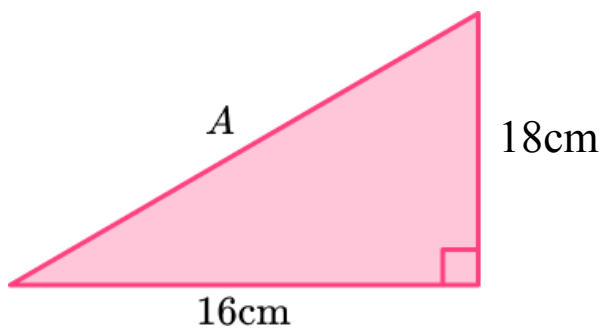
1) Find $\frac{3}{8}$ of 72. **27**

2) Expand:

$$7(4 - 3x) = 28 - 21x$$

3) Express 30 as a product of primes. **$2 \times 3 \times 5$**

4) Find the length of the side marked A. **20cm**



5) A TV is featured in a sale. By what percentage has the price been reduced? **10%**



Week 9: Day 2

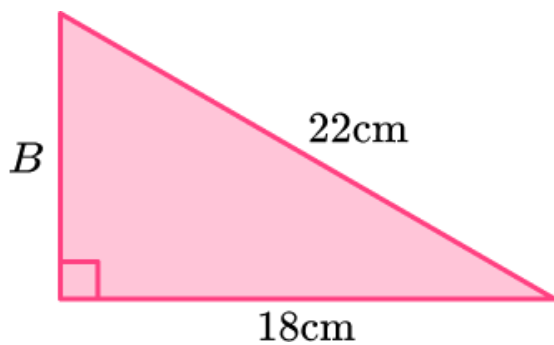
1) Find $\frac{5}{6}$ of 84.

2) Factorise fully:

$$9x - 6x^2$$

3) Express 90 as a product of primes, using index notation.

4) Find the length of the side marked B . Give your answer rounded to one decimal place.



5) In two years a plant has grown from 20cm tall to 50cm tall. By what percentage has the height of the plant increased?



Week 9: Day 2 Answers

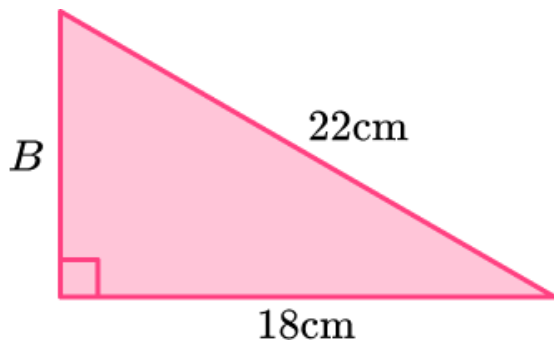
1) Find $\frac{5}{6}$ of 84. 70

2) Factorise fully:

$$9x - 6x^2 \quad 3x(3 - 2x)$$

3) Express 90 as a product of primes, using index notation. $2 \times 3^2 \times 5$

4) Find the length of the side marked B . Give your answer rounded to one decimal place. 12.6cm (1dp)



5) In two years a plant has grown from 20cm tall to 50cm tall. By what percentage has the height of the plant increased? 150%



Week 9: Day 3

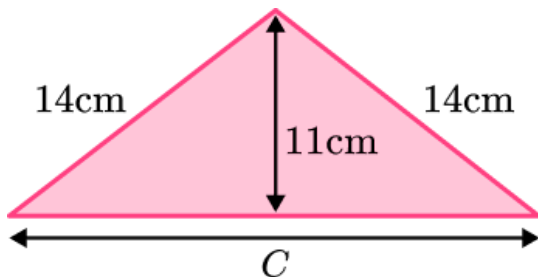
1) Find $\frac{2}{5}$ of 105.

2) Expand:

$$- 3(3x - 5)$$

3) Express 80 as a product of primes, using index notation.

4) Find the length of the side marked C . Give your answer rounded to one decimal place.



5) A TV is featured in a sale. By what percentage has the price been reduced?



Week 9: Day 3 Answers

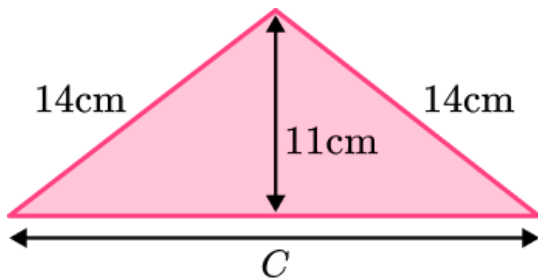
1) Find $\frac{2}{5}$ of 105. 42

2) Expand:

$$-3(3x - 5) = -9x + 15$$

3) Express 80 as a product of primes, using index notation. $2^4 \times 5$

4) Find the length of the side marked C . Give your answer rounded to one decimal place. 17.3cm (1dp)



5) A TV is featured in a sale. By what percentage has the price been reduced? 7.5%



Week 9: Day 4

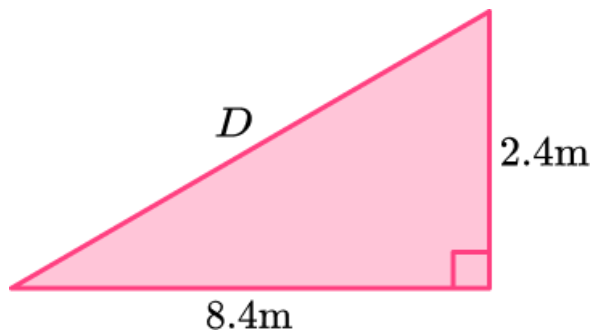
1) Find $1\frac{1}{3}$ lots of 54.

2) Factorise fully:

$$2ab - 8a + 12ac$$

3) Express 68 as a product of primes, using index notation.

4) Find the length of the side marked D . Give your answer rounded to one decimal place.



5) A rare gemstone was bought for £1600. It was then sold at auction for £2200. By what percentage has the price increased?



Week 9: Day 4 Answers

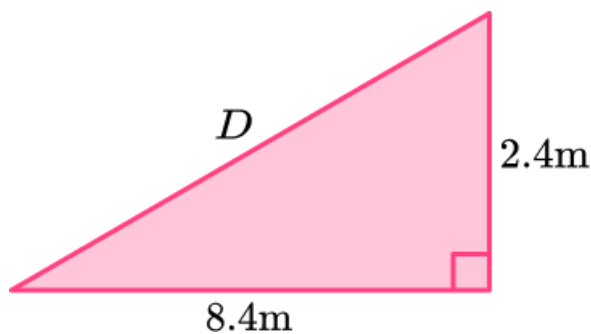
- 1) Find $1\frac{1}{3}$ lots of 54. 72

- 2) Factorise fully:

$$2ab - 8a + 12ac = 2a(b - 4 + 6c)$$

- 3) Express 68 as a product of primes, using index notation. $2^2 \times 17$

- 4) Find the length of the side marked D . Give your answer rounded to one decimal place. 8.7m (1dp)



- 5) A rare gemstone was bought for £1600. It was then sold at auction for £2200. By what percentage has the price increased? 37.5%



Week 9: Day 5

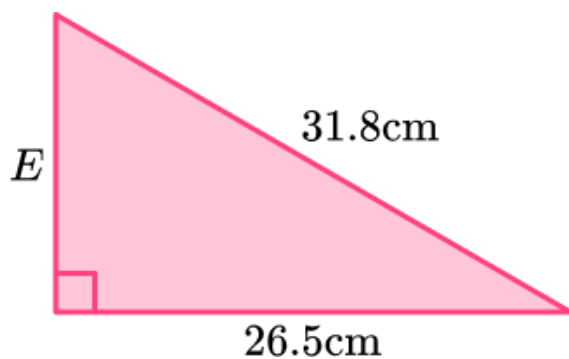
1) Find $2\frac{3}{4}$ of 36.

2) Expand:

$$a(a - b)$$

3) Express 150 as a product of primes, using index notation.

4) Find the length of the side marked E . Give your answer rounded to one decimal place.



5) A car is featured in a sale. By what percentage has the price been reduced?



Week 9: Day 5 Answers

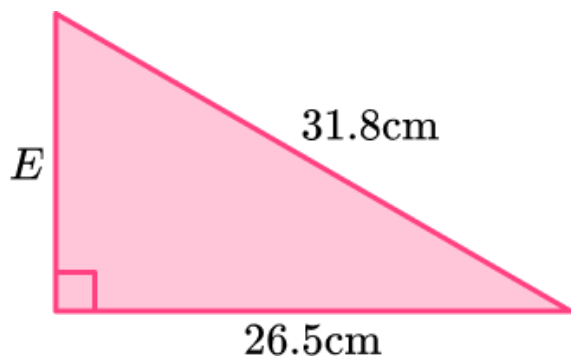
1) Find $2\frac{3}{4}$ of 36. 99

2) Expand:

$$a(a - b) = a^2 - ab$$

3) Express 150 as a product of primes, using index notation. $2 \times 3 \times 5^2$

4) Find the length of the side marked E . Give your answer rounded to one decimal place. 17.6 cm (1dp)



5) A car is featured in a sale. By what percentage has the price been reduced? 18.75%



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