

Week 6

This week in a nutshell:

We begin the half term by solidifying some key concepts that can be developed into tools for problem solving across a range of topics.

Question 1: Equivalent fractions

Question 2: Expressing as a percentage

Question 3: Linear equations

Question 4: Angles in a triangle

Question 5: Perimeter

There is a fundamental connection between fractions and percentages which can be explored as key skills are developed. The other topics are built upon over the half term, so dealing with any misconceptions that arise will really help.

This week's ideas for class discussion include:

Question 1: Equivalent fractions

- Why might it be an advantage to express a fraction using an equivalent form?
- Does using equivalent fractions change the size of the fraction?

Question 2: Expressing as a percentage

- Why do you think percentages are used?
- Can you give examples of how/where percentages have been used?

Question 3: Linear equations

- Is it possible for an equation to have more than one solution?
- Is it possible for an equation to have no solution?

Question 4: Angles in a triangle

- Using only a piece of paper, how could you show that the angles in a triangle add up to 180° ?

Question 5: Perimeter

- Can you think of a way to remember how to find perimeter?

Week 6: Day 1

1) Determine the equivalent fractions:

a) $\frac{1}{2} = \frac{\square}{4} = \frac{5}{\square} = \frac{15}{\square}$ b) $\frac{1}{4} = \frac{2}{\square} = \frac{8}{\square} = \frac{\square}{100}$

2) What percentage of this bar is shaded red?

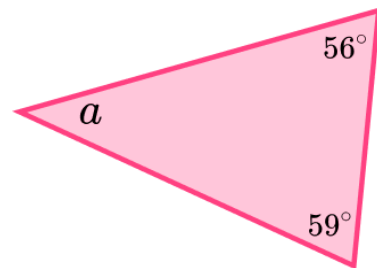


3) Solve

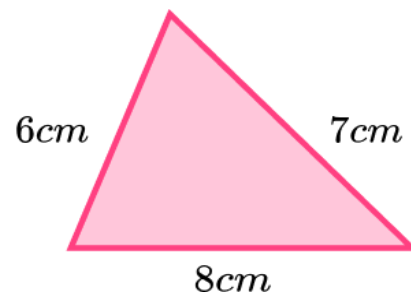
a) $x + 7 = 12$

b) $23 - x = 14$

4) What size is the angle marked a ?



5) Calculate the perimeter of this triangle.



Week 6: Day 1 Answers

1) Determine the equivalent fractions:

a) $\frac{1}{2} = \frac{2}{4} = \frac{5}{10} = \frac{15}{30}$ b) $\frac{1}{4} = \frac{2}{8} = \frac{8}{32} = \frac{25}{100}$

2) What percentage of this bar is shaded red?



50%

3) Solve

a) $x + 7 = 12$

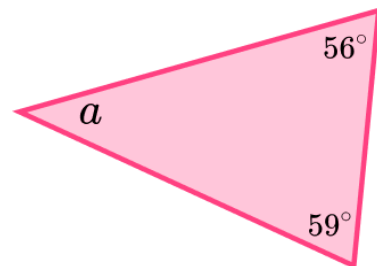
$x = 5$

b) $23 - x = 14$

$x = 9$

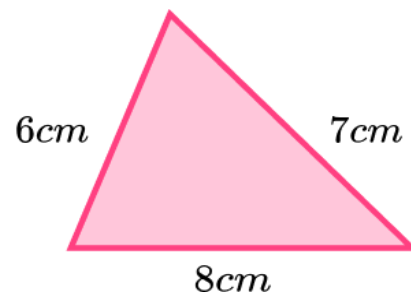
4) What size is the angle marked a ?

65°



5) Calculate the perimeter of this triangle.

21 cm



Week 6: Day 2

1) Determine the equivalent fractions:

a) $\frac{3}{4} = \frac{\square}{8} = \frac{12}{\square} = \frac{21}{\square}$ b) $\frac{2}{5} = \frac{6}{\square} = \frac{8}{\square} = \frac{\square}{100}$

2) What percentage of this shape is shaded blue?

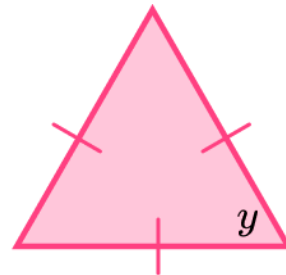


3) Solve

a) $5x + 9 = 24$

b) $28 - 3x = 13$

4) What size is the angle marked y ?



5) The shape below is a square.
What is its perimeter?



Week 6: Day 2 Answers

1) Determine the equivalent fractions:

a) $\frac{3}{4} = \frac{6}{8} = \frac{12}{16} = \frac{21}{28}$

b) $\frac{2}{5} = \frac{6}{15} = \frac{8}{20} = \frac{40}{100}$

2) What percentage of this shape is shaded blue?



25%

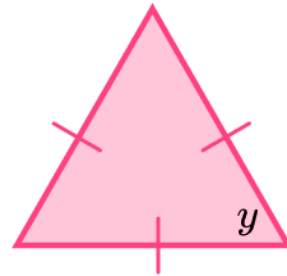
3) Solve

a) $5x + 9 = 24$
 $x = 3$

b) $28 - 3x = 13$
 $x = 5$

4) What size is the angle marked y ?

60°



5) The shape below is a square.
What is its perimeter?

12 cm



Week 6: Day 3

1) Determine the equivalent fractions:

a) $\frac{3}{7} = \frac{\square}{14} = \frac{12}{\square} = \frac{21}{\square}$

b) $\frac{24}{80} = \frac{6}{\square} = \frac{12}{\square} = \frac{\square}{160}$

2) What is

a) 6 out of 20 as a percentage?

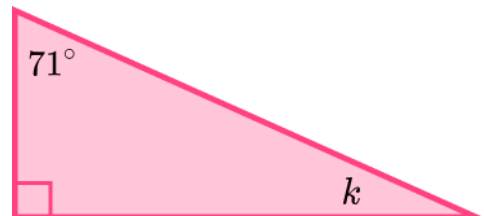
b) 5 out of 25 as a percentage?

3) Solve

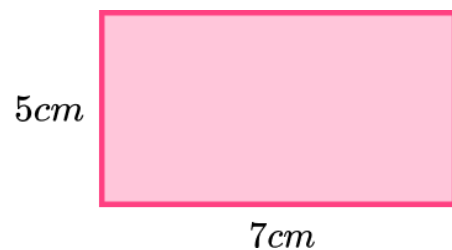
a) $\frac{x}{4} - 3 = 7$

b) $27 - \frac{x}{2} = 21$

4) Work out the size of the angle labelled k ?



5) The shape below is a rectangle. What is its perimeter?



Week 6: Day 3 Answers

1) Determine the equivalent fractions:

a) $\frac{3}{7} = \frac{6}{14} = \frac{12}{28} = \frac{21}{49}$ b) $\frac{24}{80} = \frac{6}{20} = \frac{12}{40} = \frac{48}{160}$

2) What is

a) 6 out of 20 as a percentage?
30%

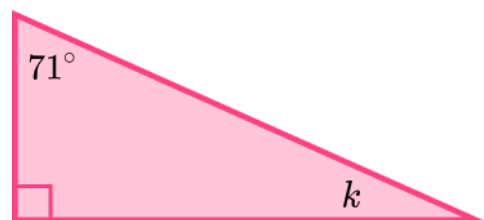
b) 5 out of 25 as a percentage?
20%

3) Solve

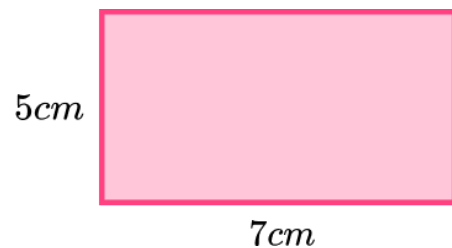
a) $\frac{x}{4} - 3 = 7$
 $x = 40$

b) $27 - \frac{x}{2} = 21$
 $x = 12$

4) Work out the size of the angle labelled k ?
 19°



5) The shape below is a rectangle. What is its perimeter?
24 cm



Week 6: Day 4

1) Determine the equivalent fractions:

a) $\frac{1}{11} = \frac{\square}{44} = \frac{12}{\square} = \frac{21}{\square}$ b) $\frac{36}{60} = \frac{6}{\square} = \frac{12}{\square} = \frac{\square}{100}$

2) What is

a) **12** out of 40 as a percentage?

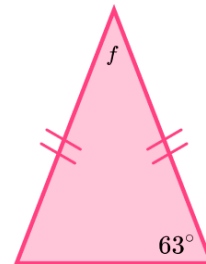
b) **6** out of 30 as a percentage?

3) Solve

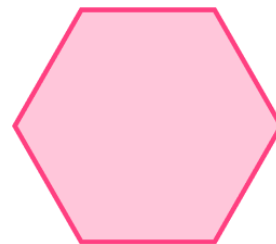
a) $4(3x - 5) = 28$

b) $12 + \frac{36}{x} = 18$

4) Find the size of angle f ?



5) This is a regular hexagon. Its perimeter is 42cm. Find the length of one side.



Week 6: Day 4 Answers

1) Determine the equivalent fractions:

a) $\frac{1}{11} = \frac{4}{44} = \frac{12}{132} = \frac{21}{231}$

b) $\frac{36}{60} = \frac{6}{10} = \frac{12}{20} = \frac{60}{100}$

2) What is

a) 12 out of 40 as a percentage?
30%

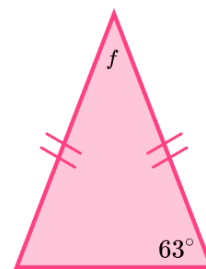
b) 6 out of 30 as a percentage?
20%

3) Solve

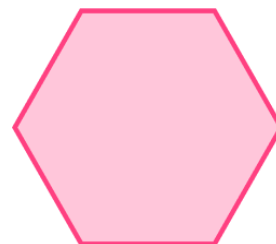
a) $4(3x - 5) = 28$
 $x = 4$

b) $12 + \frac{36}{x} = 18$
 $x = 6$

4) Find the size of angle f ?
54°



5) This is a regular hexagon. Its perimeter is 42cm. Find the length of one side.
7 cm



Week 6: Day 5

1) Determine the equivalent fractions:

a) $\frac{1}{\square} = \frac{\square}{48} = \frac{12}{36} = \frac{5}{\square}$ b) $\frac{15}{50} = \frac{6}{\square} = \frac{3}{\square} = \frac{\square}{100}$

2) What is

a) 9 out of 15 as a percentage?

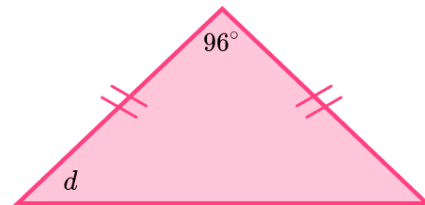
b) 7 out of 21 as a percentage?

3) Solve

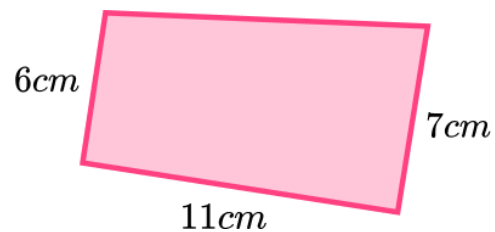
a) $\frac{3x-1}{5} = 7$

b) $\frac{22}{3x-1} = 2$

4) Determine the size of angle d .



5) The perimeter of this shape is 37 cm. What length is the unlabelled side?



Week 6: Day 5 Answers

1) Determine the equivalent fractions:

a) $\frac{1}{3} = \frac{16}{48} = \frac{12}{36} = \frac{5}{15}$

b) $\frac{15}{50} = \frac{6}{20} = \frac{3}{10} = \frac{30}{100}$

2) What is

a) 9 out of 15 as a percentage?
60%

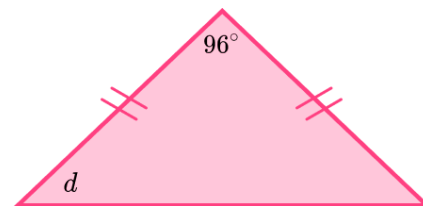
b) 7 out of 21 as a percentage?
33.3%

3) Solve

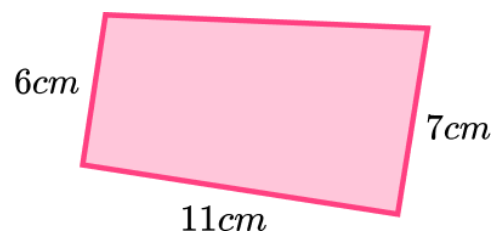
a) $\frac{3x-1}{5} = 7$
 $x = 12$

b) $\frac{22}{3x-1} = 2$
 $x = 4$

4) Determine the size of angle d .
42°



5) The perimeter of this shape is 37 cm. What length is the unlabelled side?
13cm



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