

Contents

1. Whole Numbers	1
2. Fractions	34
3. Decimals	72
4. Ratio	109
5. Percentage	146
Answers	181

Whole Numbers

What will be covered:

Solving Word Problems Involving

- 1.1 Comparison of Items
- 1.2 Repeated Quantities
- 1.3 Same Amount (Before)
- 1.4 Same Amount (After)
- 1.5 Before-and-After: Same Total (Internal Transfer)
- 1.6 Before-and-After: Same Total (Fixed Quantities)
- 1.7 Before-and-After: Same Total (Equal Amount Removed and Added)
- 1.8 Before-and-After: Same Difference (Age)
- 1.9 Before-and-After: Same Difference (Same Amount Added)
- 1.10 Before-and-After: Same Difference (Same Amount Removed)
- 1.11 Before-and-After: Same Difference (Overlap)
- 1.12 Before-and-After: Same One Item
- 1.13 Before-and-After: Both Changed
- 1.14 Grouping /Number and Value
- 1.15 Change Involving Two Cases

3 Solving Word Problems Involving Same Amount (Before)

Worked Example (– / –)

Ryan and Steven had an equal amount of money at first. After Ryan spent \$202 and Steven spent \$132, Steven had two times as much as Ryan had in the end. How much did each of them have at first?

Solution:

At first

Ryan	
Steven	

End

	202		
Ryan	1 unit	70	132
Steven	1 unit	70	132
	2 units		

Shade when take away.

Cut the model into equal parts.

$$1 \text{ unit} = 202 - 132$$

$$= 70$$

$$1 \text{ unit} + 202 = 70 + 202$$

$$= 272$$

Each of them had **\$272** at first.

Practice Questions 1.6
Before-and-After: Same Total (Fixed Quantities)

1. On Saturday, Helen opened a brand new tin of cookies. She ate some of them and found that the number of cookies left was two times the number of cookies she had eaten. After eating another 12 cookies on Sunday, she found that the number of cookies left was the same as the total number of cookies she had eaten on both days. How many cookies were there in the tin at first?

Answer: _____

2. Oscar was reading a storybook. The number of pages he had read was three times the number of pages left unread. After reading another 26 pages, he realised the number of pages he had read was 4 times the number of pages left unread. How many pages were there in the storybook?

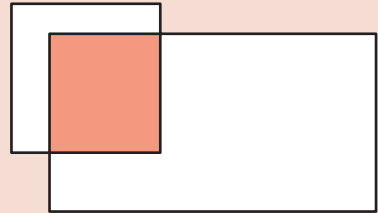
Answer: _____

10

Solving Word Problems Involving Before-and-After: Same Difference (Overlap)

Worked Example

The figure is made up of a rectangle and a square. The area of square is $\frac{4}{7}$ of the area of the rectangle. The area of unshaded part of the square is $\frac{1}{7}$ of the area of the unshaded part of the rectangle. Given that the area of the shaded part is 28 cm^2 , find the area of the figure.



Solution:

Area of square = A + B

Area of Rectangle = B + C

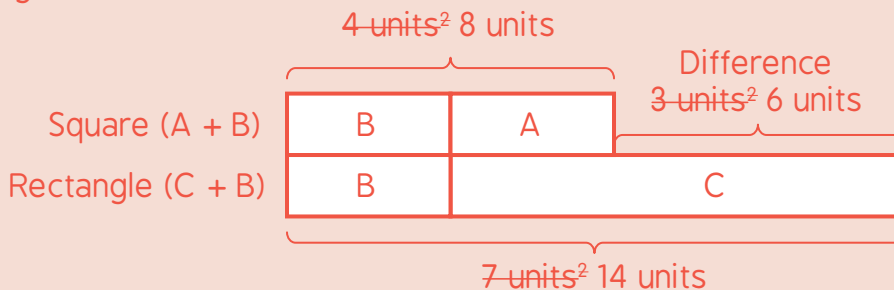
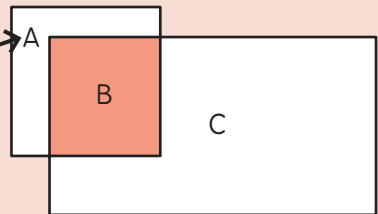
Shaded area = B

Unshaded area of square = A

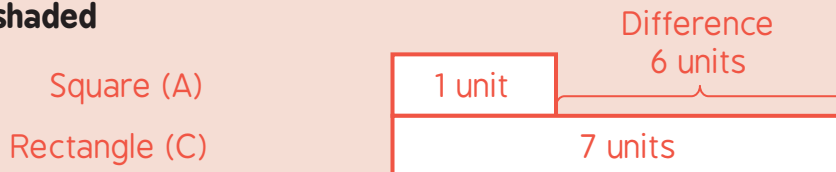
Unshaded area of rectangle = C

Area of figure = A + B + C

Label the regions so that there is no more overlapping.



Unshaded



$$7 \text{ units} = 28$$

$$1 \text{ unit} = 28 \div 7$$

$$= 4$$

$$15 \text{ units} = 15 \times 4$$

$$= 60$$

The area of the figure is **60 cm²**.

Practice Questions 2.17 – Change Involving Two Cases

1. There were some children in *Sunshine School* and *Watertown School*. If 65 children joined in *Sunshine School*, then there would be $\frac{4}{5}$ as many children in *Sunshine School* as in *Watertown School*. If 225 children joined in *Watertown School*, then there would be $\frac{3}{5}$ as many children in *Sunshine School* as in *Watertown School*. How many children were there in *Watertown School*?

Answer: _____

Practice Questions 3.4

Before-and-After: Same Total (Internal Transfer)

1. There were 1.5 as many books in Room A as in Room B. As the painter needed to paint Room A, 195 books were transferred from Room A to Room B. As a result, the number of books in Room A was 0.2 the number of books in Room B. How many books were there in Room B at first?

Answer: _____

2. Kenny saved all his 50-cents coins in two coin banks. 0.65 of the coins were saved in the Bunny coin bank and the rest were saved in the Tortoise coin bank. After he transferred 7 50-cents coins from Bunny coin bank to Tortoise coin bank, there were 1.5 as many coins in Bunny coin bank as in Tortoise coin bank. How much did Kenny save altogether in both coin banks?

Answer: _____