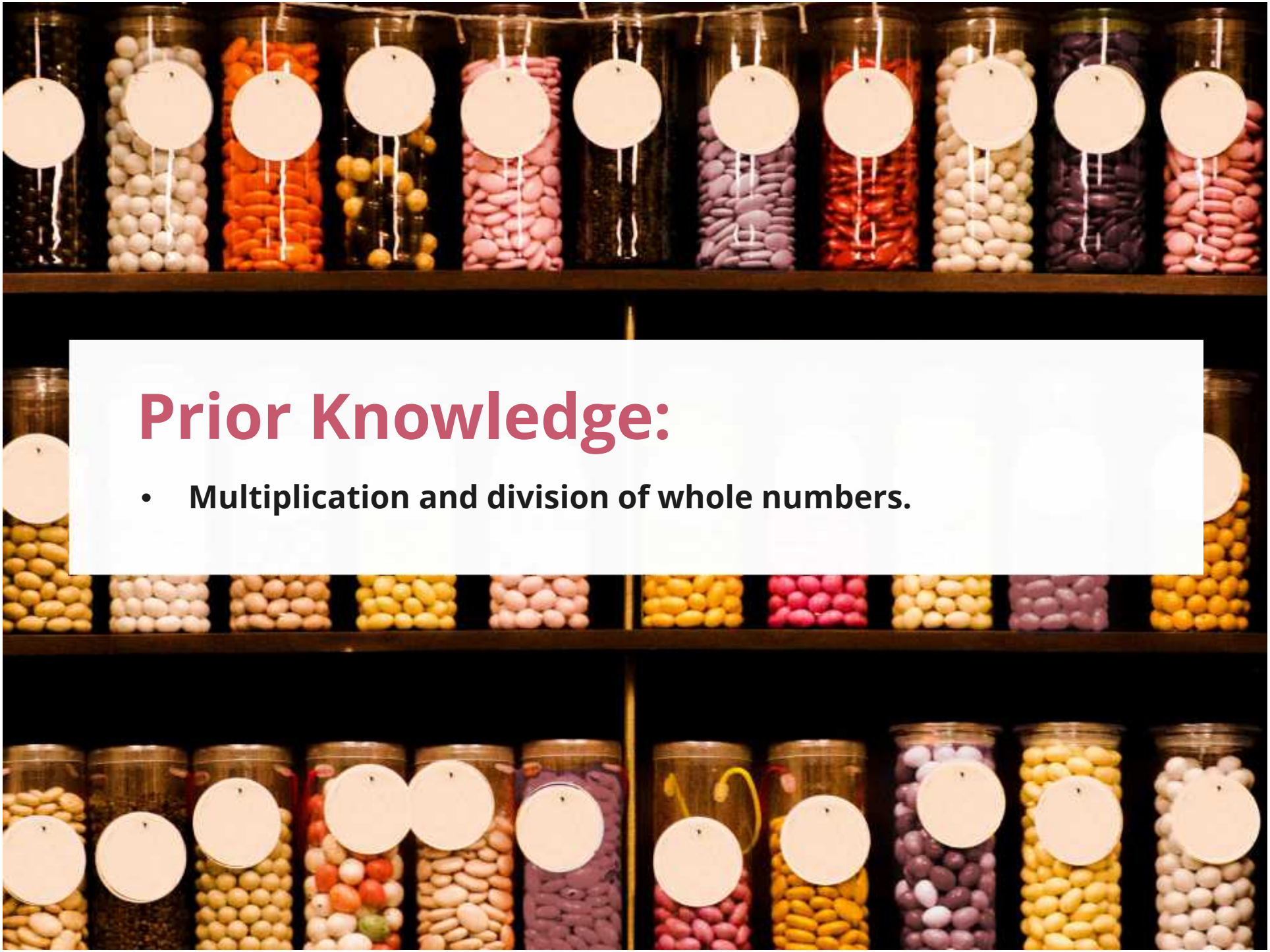

Prior Knowledge:

- **Multiplication and division of whole numbers.**

Example 1:

Each bag of sweets in a shop contains 6 sweets. 3 are red, 2 are blue and 1 is yellow. How many red, blue and yellow sweets would I have if I bought 5 packets?

If I want to know how many sweets I would get from 2 packets, I multiply the numbers of sweets in 1 packet by 2.

In 2 packets, I would have 6 red, 4 blue and 2 yellow sweets.

If I want to know how many sweets I would get from 3 packets, I multiply the numbers of sweets in 1 packet by 3.

In 3 packets, I would have 9 red, 6 blue and 3 yellow sweets.

The question asks how many sweets I would have in 5 packets.
Therefore,
I multiply the numbers of sweets in 1 packet by 5.

In 5 packets, I would have 15 red, 10 blue and 5 yellow sweets.

Example 2:

To make 5 tins of purple paint, you mix 2 tins of red paint with 3 tins of blue paint. How many tins of red paint do I need if I use 18 tins of blue paint?

There are two ways of answering this question. First, we can count up until we reach 18 tins of blue paint:

Tins of purple paint	Tins of red paint	Tins of blue paint
5	2	3
10	4	6
15	6	9
20	8	12
25	10	15
30	12	18

As you can see, when we use 18 tins of blue paint, we need 12 tins of red paint.

Example 2:

To make 5 tins of purple paint, you mix 2 tins of red paint with 3 tins of blue paint. How many tins of red paint do I need if I use 18 tins of blue paint?

We could also ask ourselves what we multiplied the original 3 tins of blue paint by to get 18. We can find this by dividing 18 by 3:

$$18 \div 3 = 6$$

If we multiply the number of tins of blue paint by 6, we must also multiply the number of tins of red paint by 6:

$$6 \times 2 = 12$$

This gives us the same answer: we need 12 tins of red paint.

Your Turn

Your Turn

1. A pencil case in a shop contains 5 pencils and 3 pens. How many pens would I get in 4 pencil cases?

2. A multi-pack of crisps contains 4 bags of ready-salted, 3 bags of cheese and onion and 2 bags of prawn cocktail. How many bags of prawn cocktail would I get in 7 multi-packs?

3. A 2-litre bottle of tropical drink contains the juice of 3 mangoes and 5 pineapples. How many pineapples do you need to make 8 litres of tropical drink?

Your Turn

4. **The table below shows the ingredients used at a bakery to make large cakes. Copy and complete the table. Make sure you state your units where necessary:**

Cake Ingredients			
No. Cakes	**Eggs**	**Flour**	**Sugar**
1	3	200g	
2			300g
3			
	12		
			750g
		1600g	
		2kg	
			1.8kg

Your Turn

5. **Marbles are put into bags in a factory. A bag contains 3 red marbles for each blue marble. If a bag contains 21 red marbles, how many blue marbles does it contain?**

6. **Students on a field trip are put into groups. Each group has one year 9 student, two year 8 students and three year 7 students. If there are 24 year 7s, how many year 8s are there?**

7. **A band sells 3 T-shirts for every 5 CDs. If they sold 25 CDs, how many T-shirts did they sell?**

8. **A cafe uses 3 rashers of bacon for every 2 sausages. One morning, they used 33 rashers of bacon. How many sausages did they use?**

9. **To make 5 litres of a shade of paint requires 3 litres of red paint and 2 litres of yellow. What is the maximum number of litres you can make if you have 12 litres of yellow paint?**

Your Turn

10. **Each time they perform an experiment, a scientist needs 5 bottles of chemical A and 7 bottles of chemical B. They have 30 bottles of chemical A and 40 bottles of chemical B. How many times can they do the experiment?**

11. **John is paid £2 for each £3 Mary is paid. Between them they are paid a total of £40. How much is John paid?**

12. **Ginny wins some money. Her daughter, Jo wins £5 for each £20 Ginny wins. If Jo gets £55, how much money did they win altogether?**

Challenge:
The gears on a bike are set up so that when you pedal 2 full strokes, the rear wheel goes round 3 times. Each time the rear wheel goes round, the bike covers a distance of 2m. Ann has to cycle 1.2km home from school, uphill. How many full pedal strokes does she have to do to cover that distance?

Answers

Answers

1. A pencil case in a shop contains 5 pencils and 3 pens. How many pens would I get in 4 pencil cases?

   4 × 3 = 12 pens

2. A multi-pack of crisps contains 4 bags of ready-salted, 3 bags of cheese and onion and 2 bags of prawn cocktail. How many bags of prawn cocktail would I get in 7 multi-packs?

   7 × 2 = 14 bags

3. A 2-litre bottle of tropical drink contains the juice of 3 mangoes and 5 pineapples. How many pineapples do you need to make 8 litres of tropical drink?

   You need 4 lots of 2 litres to make 8 litres.

   4 × 5 = 20 pineapples

Answers

4. **The table below shows the ingredients used at a bakery to make large cakes. Copy and complete the table. Make sure you state your units where necessary:**

Cake Ingredients			
No. Cakes	**Eggs**	**Flour**	**Sugar**
1	3	200g	150g
2	6	400g	300g
3	9	600g	450g
4	12	800g	600g
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8	24	1600g	1200g/1.2kg
10	30	2kg	1500g/1.5kg
12	36	2400g/2.4kg	1.8kg

Answers

5. **Marbles are put into bags in a factory. A bag contains 3 red marbles for each blue marble. If a bag contains 21 red marbles, how many blue marbles does it contain?**
   21 ÷ 3 = 7
   7 × 1 = 7

6. **Students on a field trip are put into groups. Each group has one year 9 student, two year 8 students and three year 7 students. If there are 24 year 7s, how many year 8s are there?**
   24 ÷ 3 = 8
   8 × 2 = 16

7. **A band sells 3 T-shirts for every 5 CDs. If they sold 25 CDs, how many T-shirts did they sell?**
   25 ÷ 5 = 5
   5 × 3 = 15 T-shirts

8. **A cafe uses 3 rashers of bacon for every 2 sausages. One morning, they used 33 rashers of bacon. How many sausages did they use?**
   33 ÷ 3 = 11
   11 × 2 = 22

Answers

9. To make 5 litres of a shade of paint requires 3 litres of red paint and 2 litres of yellow. What is the maximum number of litres you can make if you have 12 litres of yellow paint?

12 ÷ 2 = 6

6 × 3 = 18

18 + 12 = 30 litres

10. Each time they perform an experiment, a scientist needs 5 bottles of chemical A and 7 bottles of chemical B. They have 30 bottles of chemical A and 40 bottles of chemical B. How many times can they do the experiment?

30 ÷ 5 = 6 lots of chemical A

40 ÷ 7 = 5r5 or 5.7 lots of chemical B

They only have enough to do the experiment 5 times.

11. John is paid £2 for each £3 Mary is paid. Between them they are paid a total of £40. How much is John paid?

2 + 3 = 5

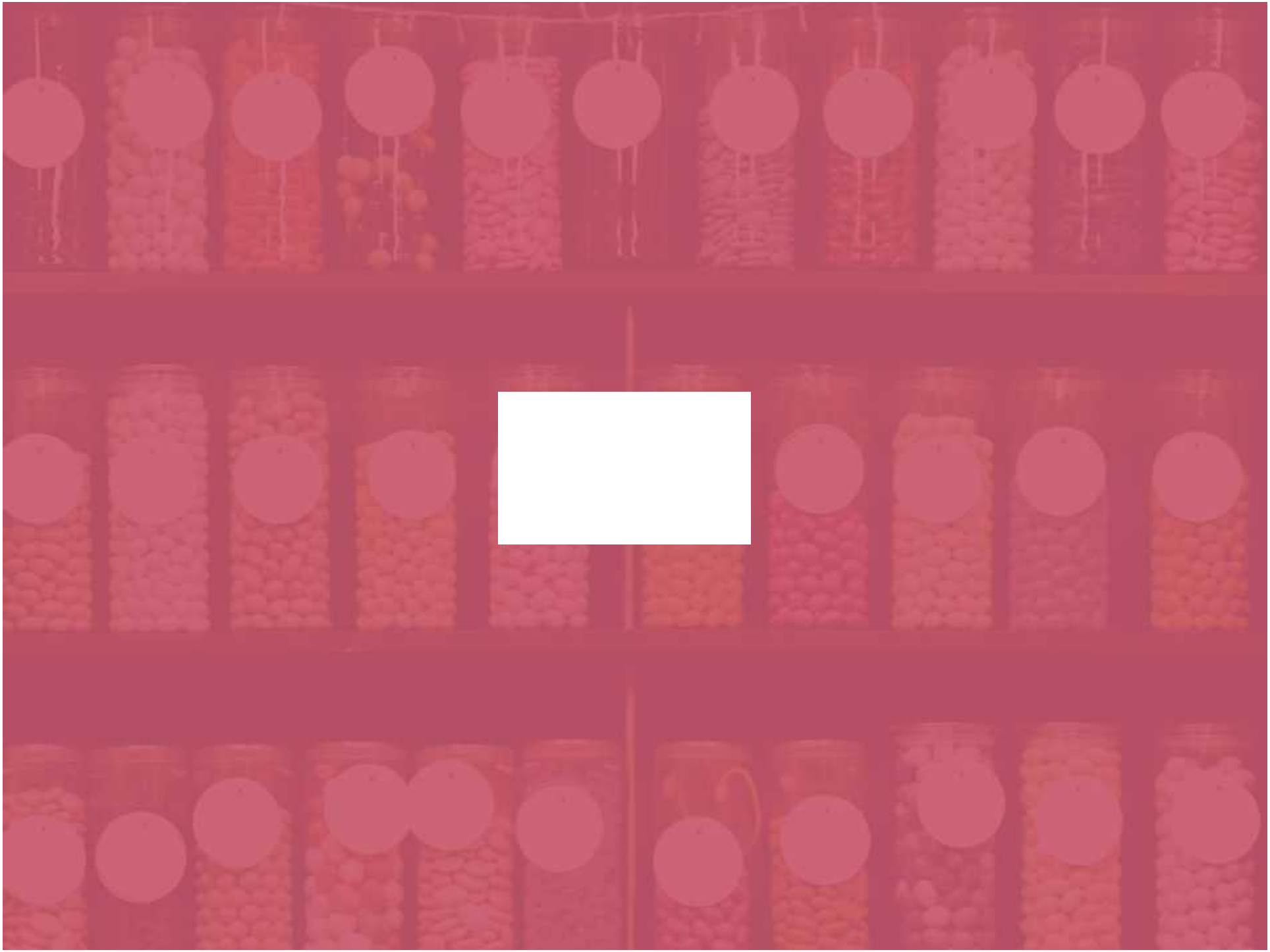
40 ÷ 5 = 8

2 × 8 = £16

Answers

12. **Ginny wins some money. Her daughter, Jo wins £5 for each £20 Ginny wins. If Jo gets £55, how much money did they win altogether?**
    55 ÷ 5 = 11
    11 × 20 = £220 (the amount Ginny wins)
    220 + 55 = £275

Challenge:
The gears on a bike are set up so that when you pedal 2 full strokes, the rear wheel goes round 3 times. Each time the rear wheel goes round, the bike covers a distance of 2m. Ann has to cycle 1.2km home from school, uphill. How many full pedal strokes does she have to do to cover that distance?
1.2km = 1200m
1200 ÷ 2 = 600 (the number of times the rear wheel goes round)
600 ÷ 3 = 200
200 × 2 = 400 full pedal strokes



Problems Involving the Relative Sizes of Two Quantities

Prior Knowledge:

- Multiplication and division of whole numbers.

Example 1:

Each bag of sweets in a shop contains 6 sweets. 3 are red, 2 are blue and 1 is yellow. How many red, blue and yellow sweets would I have if I bought 5 packets?

If I want to know how many sweets I would get from 2 packets, I multiply the numbers of sweets in 1 packet by 2.

In 2 packets, I would have 6 red, 4 blue and 2 yellow sweets.

If I want to know how many sweets I would get from 3 packets, I multiply the numbers of sweets in 1 packet by 3.

In 3 packets, I would have 9 red, 6 blue and 3 yellow sweets.

The question asks how many sweets I would have in 5 packets. Therefore, I multiply the numbers of sweets in 1 packet by 5.

In 5 packets, I would have **15 red, 10 blue and 5 yellow sweets**.

Example 2:

To make 5 tins of purple paint, you mix 2 tins of red paint with 3 tins of blue paint. How many tins of red paint do I need if I use 18 tins of blue paint?

There are two ways of answering this question. First, we can count up until we reach 18 tins of blue paint:

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As you can see, when we use 18 tins of blue paint, we need **12 tins of red paint**.

We could also ask ourselves what we multiplied the original 3 tins of blue paint by to get 18. We can find this by dividing 18 by 3:

$18 \div 3 = 6$

If we multiply the number of tins of blue paint by 6, we must also multiply the number of tins of red paint by 6:

$6 \times 2 = 12$

This gives us the same answer: we need **12 tins of red paint**.

Problems Involving the Relative Sizes of Two Quantities **Worksheet**

1. A pencil case in a shop contains 5 pencils and 3 pens. How many pens would I get in 4 pencil cases?

2. A multi-pack of crisps contains 4 bags of ready-salted, 3 bags of cheese and onion and 2 bags of prawn cocktail. How many bags of prawn cocktail would I get in 7 multi-packs?

3. A 2-litre bottle of tropical drink contains the juice of 3 mangoes and 5 pineapples. How many pineapples do you need to make 8 litres of tropical drink?

4. The table below shows the ingredients used at a bakery to make large cakes. Copy and complete the table. Make sure you state your units where necessary:

Cake Ingredients			
No. Cakes	Eggs	Flour	Sugar
1	3	200g	
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5. Marbles are put into bags in a factory. A bag contains 3 red marbles for each blue marble. If a bag contains 21 red marbles, how many blue marbles does it contain?

6. Students on a field trip are put into groups. Each group has one year 9 student, two year 8 students and three year 7 students. If there are 24 year 7s, how many year 8s are there?

7. A band sells 3 T-shirts for every 5 CDs. If they sold 25 CDs, how many T-shirts did they sell?

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9. To make 5 litres of a shade of paint requires 3 litres of red paint and 2 litres of yellow. What is the maximum number of litres you can make if you have 12 litres of yellow paint?

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Challenge:

The gears on a bike are set up so that when you pedal 2 full strokes, the rear wheel goes round 3 times. Each time the rear wheel goes round, the bike covers a distance of 2m. Ann has to cycle 1.2km home from school, uphill. How many full pedal strokes does she have to do to cover that distance?

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Problems Involving the Relative Sizes of Two Quantities
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