



**Age 11+ Level ★**  
**Worksheet 1 - Solutions**

**1. Minutes in Between**

141 minutes

[nrich.maths.org/6196/solution](https://nrich.maths.org/6196/solution)

**2. Roman Distances**

Marcus had to walk round his atrium 25 times  
(XXV in Roman numerals)

[nrich.maths.org/6236/solution](https://nrich.maths.org/6236/solution)

**3. Flying Down Under**

It was 7.30pm in Melbourne

[nrich.maths.org/5693/solution](https://nrich.maths.org/5693/solution)

**4. Thunder and Lightning**

6 x 330 metres is roughly 2000 metres

[nrich.maths.org/6248/solution](https://nrich.maths.org/6248/solution)

**5. Family Fortune**

The original sum was £240

[nrich.maths.org/5013/solution](https://nrich.maths.org/5013/solution)

**6. Flapjack**

I can make 32 flapjacks

[nrich.maths.org/6202/solution](https://nrich.maths.org/6202/solution)

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**Worksheet 2 – Solutions**

**1. Turbo Tortoise**

Harriet should she set off 90 minutes after Turbo, that is at 9.45am  
[nrich.maths.org/5694/solution](https://nrich.maths.org/5694/solution)

**2. A Classy Ratio**

The ratio of girls to boys is 15:9 = 5:3  
[nrich.maths.org/11685/solution](https://nrich.maths.org/11685/solution)

**3. Printer Ink**

1350 pages  
[nrich.maths.org/11680/solution](https://nrich.maths.org/11680/solution)

**4. Dean's Mountain**

40 minutes to run down the mountain  
[nrich.maths.org/11630/solution](https://nrich.maths.org/11630/solution)

**5. Speed over a Bridge**

60 kilometres per hour  
[nrich.maths.org/12777/solution](https://nrich.maths.org/12777/solution)

**6. Athletics Club**

128 members  
[nrich.maths.org/11700/solution](https://nrich.maths.org/11700/solution)

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**Worksheet 3 - Solutions**

**1. Race Time**

Gabriel won by 6 seconds

[nrich.maths.org/6766/solution](https://nrich.maths.org/6766/solution)

**2. Three of a Kind**

In 316 minutes (5 hrs 16 min) all the digits will be the same (11:11)

[nrich.maths.org/2533/solution](https://nrich.maths.org/2533/solution)

**3. 24 Hour Conundrum**

It is 20:15

[nrich.maths.org/12572/solution](https://nrich.maths.org/12572/solution)

**4. Draining a Pool**

8 minutes

[nrich.maths.org/13388/solution](https://nrich.maths.org/13388/solution)

**5. Eating Beans**

Pa Bean ate 11 beans

[nrich.maths.org/5020/solution](https://nrich.maths.org/5020/solution)

**6. Brothers and Sisters**

There are 4 brothers and 3 sisters in the family

[nrich.maths.org/12771/solution](https://nrich.maths.org/12771/solution)

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**Worksheet 1 - Solutions**

**1. Don't Be Late**

5 hours

[nrich.maths.org/6795/solution](https://nrich.maths.org/6795/solution)

**2. Decimal Clock**

2:50

[nrich.maths.org/3103/solution](https://nrich.maths.org/3103/solution)

**3. Sharing Sweets**

12 tails

[nrich.maths.org/11718/solution](https://nrich.maths.org/11718/solution)

**4. Leg It**

a) 20 metres

b) 25 metres

[nrich.maths.org/12889/solution](https://nrich.maths.org/12889/solution)

**5. How Many Swimmers?**

29 members

[nrich.maths.org/11725/solution](https://nrich.maths.org/11725/solution)

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**Worksheet 2 – Solutions**

**1. Musical Maths**

A year

[nrich.maths.org/13136/solution](https://nrich.maths.org/13136/solution)

**2. Ratio Swap**

32 adults

[nrich.maths.org/13137/solution](https://nrich.maths.org/13137/solution)

**3. Out of Sync**

$\frac{2}{3}$  of the day

[nrich.maths.org/2512/solution](https://nrich.maths.org/2512/solution)

**4. Fruit Basket Ratio**

24 oranges.

[nrich.maths.org/12573/solution](https://nrich.maths.org/12573/solution)

**5. Stair Climb**

Spike first

Boris second

Percival last

[nrich.maths.org/4879/solution](https://nrich.maths.org/4879/solution)

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**Worksheet 3 - Solutions**

**1. Tyre Wear**

24000 km

[nrich.maths.org/6220/solution](https://nrich.maths.org/6220/solution)

**2. Millennium Leap**

242 leap years

[nrich.maths.org/2445/solution](https://nrich.maths.org/2445/solution)

**3. Off the Cuff**

Ratio of long-sleeve to short-sleeve shirts is 1:2

[nrich.maths.org/2450/solution](https://nrich.maths.org/2450/solution)

**4. A Leg to Stand On**

32 chairs

[nrich.maths.org/2458/solution](https://nrich.maths.org/2458/solution)

**5. The Elephant Diet**

$\frac{1}{3}$  kg of carrots

[nrich.maths.org/13693/solution](https://nrich.maths.org/13693/solution)

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**Worksheet 1 - Solutions**

**1. Antifreeze**

1 more litre of antifreeze is needed

[nrich.maths.org/5012/solution](https://nrich.maths.org/5012/solution)

**2. Platinum Puzzle**

C: a house

[nrich.maths.org/5682/solution](https://nrich.maths.org/5682/solution)

**3. Hillwalking**

Andrew walks 8 km

[nrich.maths.org/11661/solution](https://nrich.maths.org/11661/solution)

**4. Travelator**

Andrew is 300 m ahead of Bill

[nrich.maths.org/11710/solution](https://nrich.maths.org/11710/solution)

**5. Travelling by Train**

Stephen arrives in Durham at 09:38

[nrich.maths.org/11637/solution](https://nrich.maths.org/11637/solution)

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**Worksheet 2 - Solutions**

**1. Crude Calculation**

Petrol increased by 56.25%

[nrich.maths.org/12536/solution](https://nrich.maths.org/12536/solution)

**2. Pond Runners**

It takes James 288 seconds to complete one lap

[nrich.maths.org/12626/solution](https://nrich.maths.org/12626/solution)

**3. Walking in the Mountains**

They arrived at 2pm

[nrich.maths.org/6761/solution](https://nrich.maths.org/6761/solution)

**4. Shepherd's Flock**

The ratio of goats to sheep is 100:155 = 20:31

[nrich.maths.org/6790/solution](https://nrich.maths.org/6790/solution)

**5. Overtake**

Tim travelled at 66 mph

[nrich.maths.org/7167/solution](https://nrich.maths.org/7167/solution)

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**Worksheet 3 - Solutions**

**1. Bike Shop**

Average speed is 4.8 miles per hour

[nrich.maths.org/2410/solution](https://nrich.maths.org/2410/solution)

**2. Very Long Line**

It would need to be 5000 metres = 5 km long

[nrich.maths.org/11672/solution](https://nrich.maths.org/11672/solution)

**3. Inches and Barleycorns**

1 inch is the same length as 3 barleycorns

[nrich.maths.org/12943/solution](https://nrich.maths.org/12943/solution)

**4. Ratio Riddle**

The ratio of  $b : c = 9 : 8$

[nrich.maths.org/4740/solution](https://nrich.maths.org/4740/solution)

**5. Tyneside Average Speed**

The van's average speed is  $34 \frac{2}{7}$  mph

[nrich.maths.org/4744/solution](https://nrich.maths.org/4744/solution)

**6. Dolly Dolphin**

Her average speed is 7.5 m/s

[nrich.maths.org/13160/solution](https://nrich.maths.org/13160/solution)

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**Worksheet 1 - Solutions**

**1. Televisual Technology**

The ratio of widescreen width : traditional width is  $\sqrt{3}:2$  or  $\sqrt{12}:4$   
[nrich.maths.org/2453/solution](https://nrich.maths.org/2453/solution)

**2. Late for Work**

She should drive at 24 miles per hour  
[nrich.maths.org/12455/solution](https://nrich.maths.org/12455/solution)

**3. Walk up the Escalator**

It would take her 36 seconds to travel up the escalator  
[nrich.maths.org/12556/solution](https://nrich.maths.org/12556/solution)

**4. Day Out**

His average speed was 35 km/h.  
[nrich.maths.org/12627/solution](https://nrich.maths.org/12627/solution)

**5. Boys and Girls**

In September there were 1300 students in the school  
[nrich.maths.org/12843/solution](https://nrich.maths.org/12843/solution)

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**Worksheet 2 – Solutions**

**1. Laps**

The hare will first pass the tortoise on the hare's 13<sup>th</sup> lap  
[nrich.maths.org/12870/solution](https://nrich.maths.org/12870/solution)

**2. Petrol Stop**

Roberto drove 1 hour and 10 minutes after his petrol stop  
[nrich.maths.org/12934/solution](https://nrich.maths.org/12934/solution)

**3. Candles**

The ratio of the length of the longer candle to the shorter candle was 11:14  
[nrich.maths.org/13225/solution](https://nrich.maths.org/13225/solution)

**4. Flower Show**

It will take six gardeners 9 hours  
[nrich.maths.org/4739/solution](https://nrich.maths.org/4739/solution)

**5. Marathon Mission**

Her time decreased by 20%  
[nrich.maths.org/2537/solution](https://nrich.maths.org/2537/solution)

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**1. Traffic Jam**

Her average speed was reduced by 20%

[nrich.maths.org/11679/solution](https://nrich.maths.org/11679/solution)

**2. 100m Sprint**

Carol was 37m behind

[nrich.maths.org/12571/solution](https://nrich.maths.org/12571/solution)

**3. Backwards Laps**

It takes Sophie 40 seconds to complete each lap

[nrich.maths.org/12890/solution](https://nrich.maths.org/12890/solution)

**4. Fraction of Percentages**

$W$  is  $\frac{3}{16}$  of  $Z$

[nrich.maths.org/13155/solution](https://nrich.maths.org/13155/solution)

**5. Two Trains**

The journey from Amityville to Brookville took 15 hours

The journey from Brookville to Amityville took 10 hours

[nrich.maths.org/13776/solution](https://nrich.maths.org/13776/solution)

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