



# Maths

## Multiplication and Division

# Dasher



# Aim

- I can solve speed, distance and time problems.

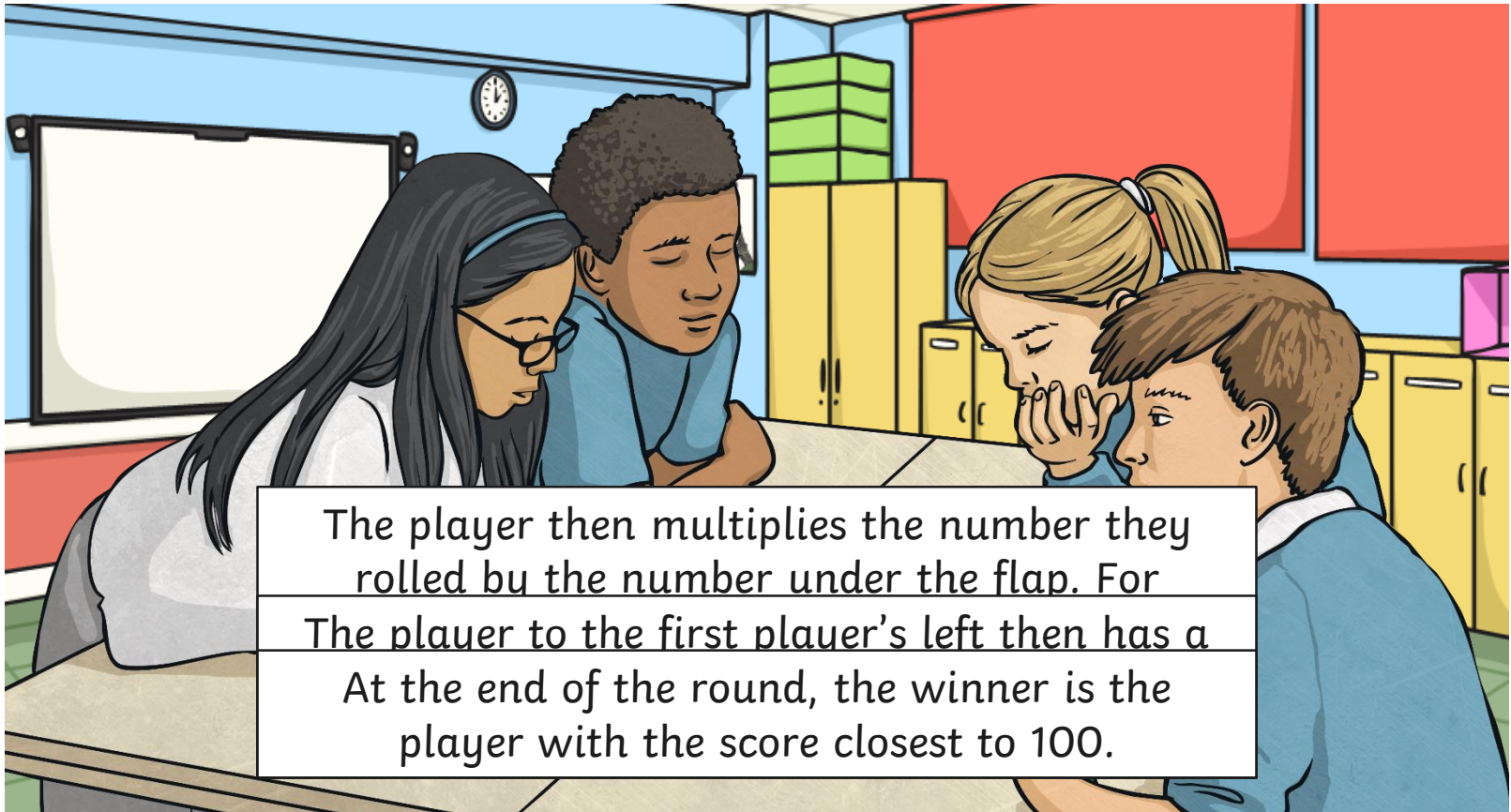
# Success Criteria

- I can use scaling to solve problems.
- I can work out speed by dividing the distance travelled by the time taken to get there.
- I can calculate the distance travelled by multiplying the speed and the time taken to get there.
- I can calculate the time taken by dividing the distance by the speed.

# Masterful Multiplication



The oldest member of your group has the first turn and rolls the dice. They lift up a flap with that number on it.



The player then multiplies the number they rolled by the number under the flap. For  
The player to the first player's left then has a  
At the end of the round, the winner is the player with the score closest to 100.

# Dasher the Dog

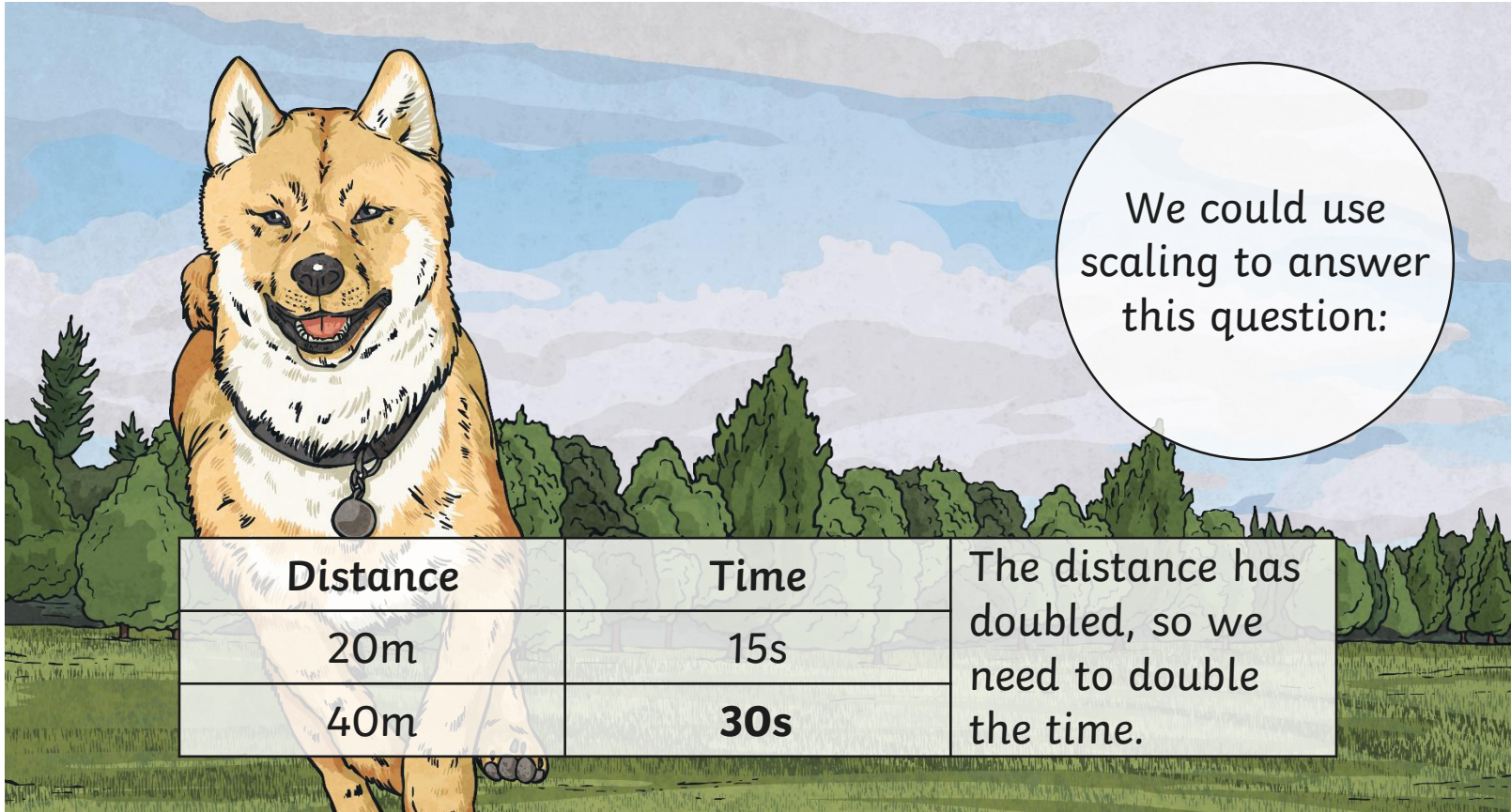
This is Dasher, my best friend.



# Dasher Dilemmas



If Dasher can run 20 metres across the park in 15 seconds, how long will it take him to run 40 metres?

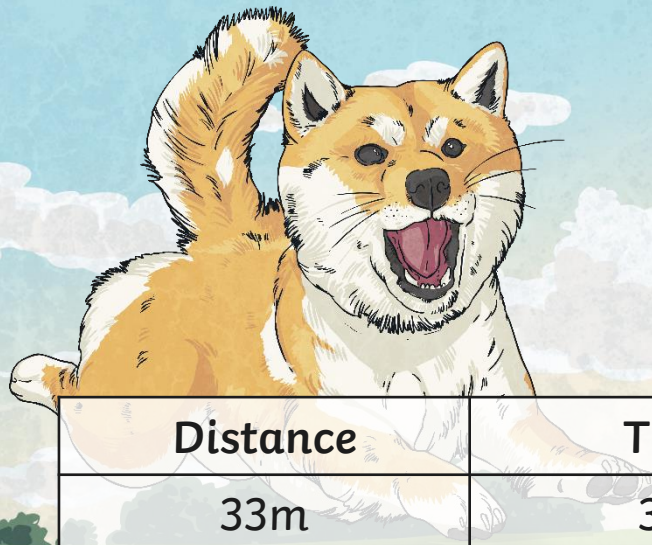


Distance	Time	The distance has doubled, so we need to double the time.
20m	15s	
40m	<b>30s</b>	

# Dasher Dilemmas



If Dasher can run 33 metres across the park in 30 seconds, how long will it take him to run 11 metres?



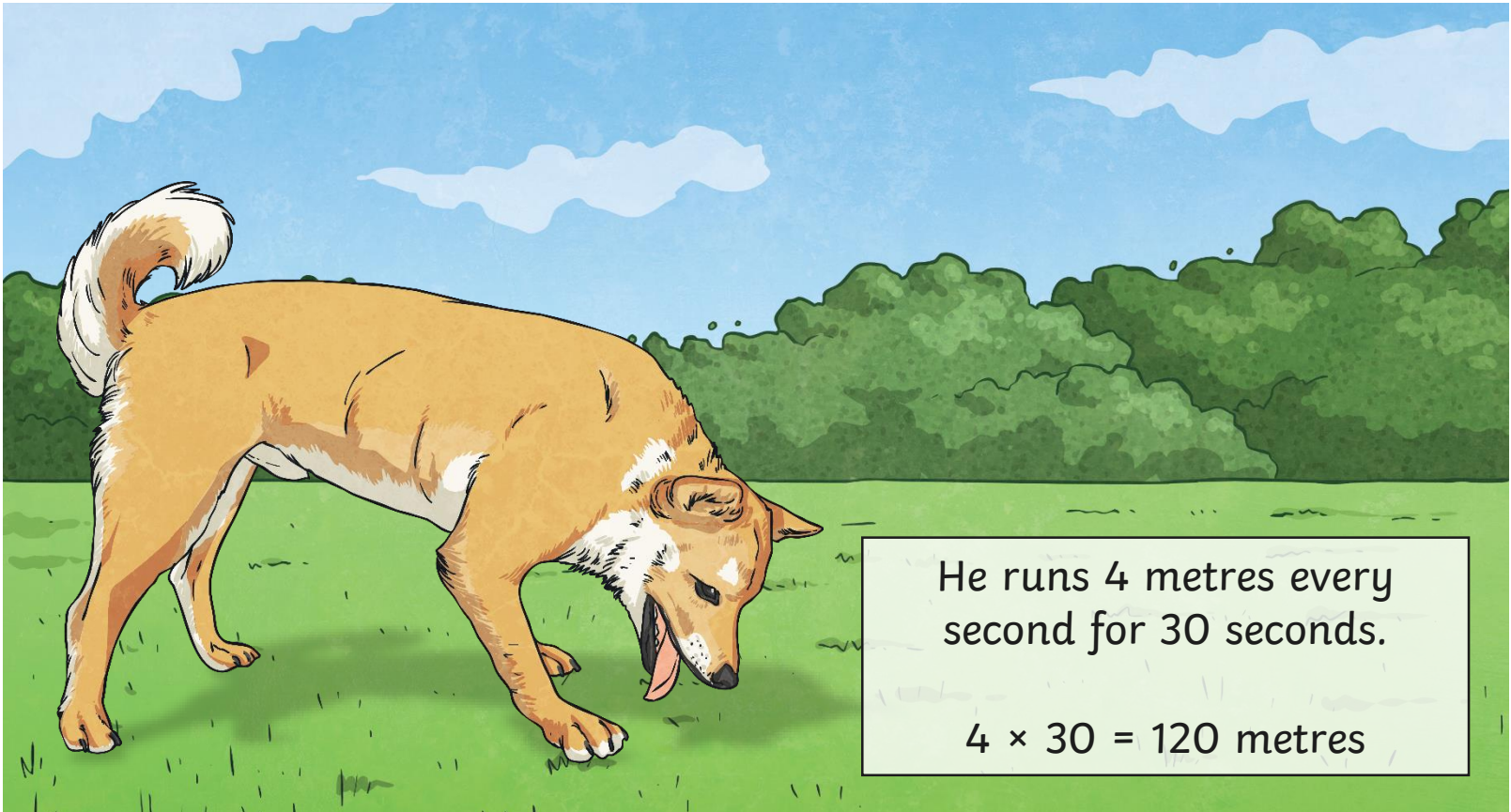
We could use scaling to answer this question:

Distance	Time	The distance has been divided by 3, so we divide the time by 3 too.
33m	30s	
11m	<b>10s</b>	

# Dasher Dilemmas



If Dasher sees a cat and chases it for 30 seconds at a speed of 4 metres per second, how far has he run?



He runs 4 metres every second for 30 seconds.

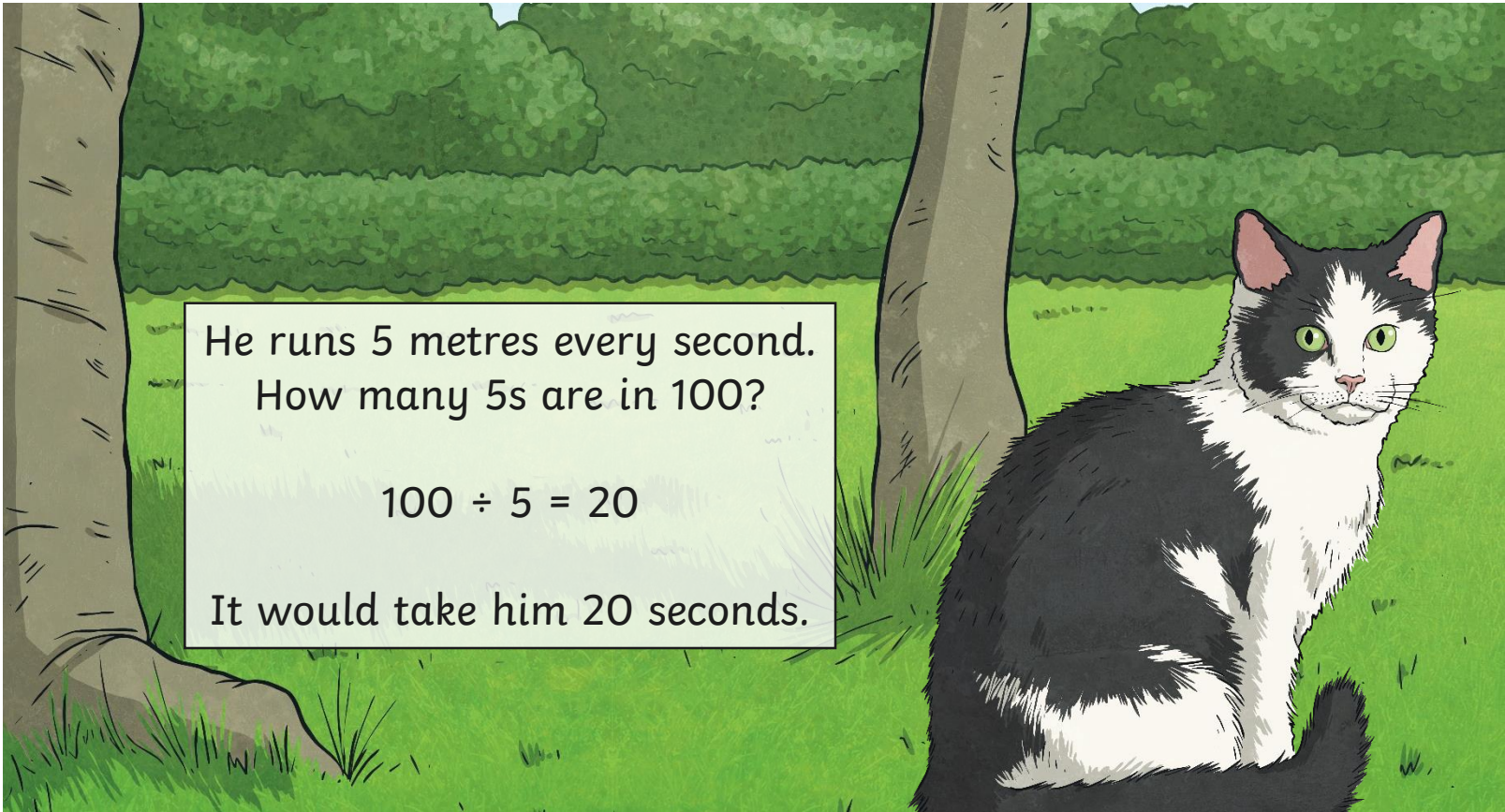
$$4 \times 30 = 120 \text{ metres}$$



# Dasher Dilemmas



How long would it take Dasher to run 100 metres if he was chasing the cat at 5 metres per second?



He runs 5 metres every second.  
How many 5s are in 100?

$$100 \div 5 = 20$$

It would take him 20 seconds.

# Speed



I thought it would be interesting to try and work out how fast Dasher can run.

If Dasher ran the length of the 80m playing field in 20 seconds, what speed was he travelling at?

I found this formula for calculating speed, distance and time.

$$\text{Speed} = 80\text{m} \div 20\text{s}$$

$$80 \div 20 = 4$$

Speed (in metres per second) = distance (metres)  $\div$  time (seconds)

Dasher was dashing at 4 metres per second (m/s).



# Distance

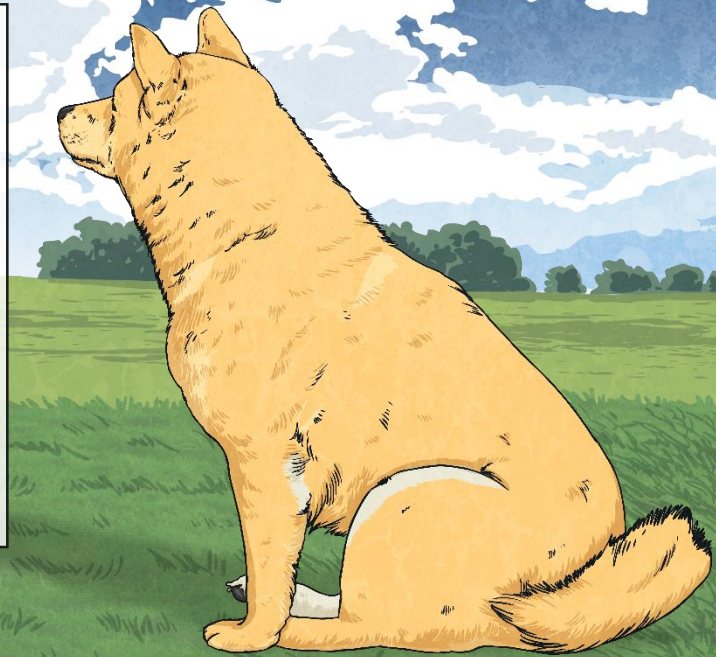


Distance (metres) = speed (m/s)  $\times$  time taken (seconds)

Dasher runs the whole length of the park. He runs at 3m/s and it takes him 28 seconds.  
How far did he run?

$$\text{Distance (metres)} = 3\text{m/s} \times 28\text{s}$$
$$3 \times 28 = 84$$

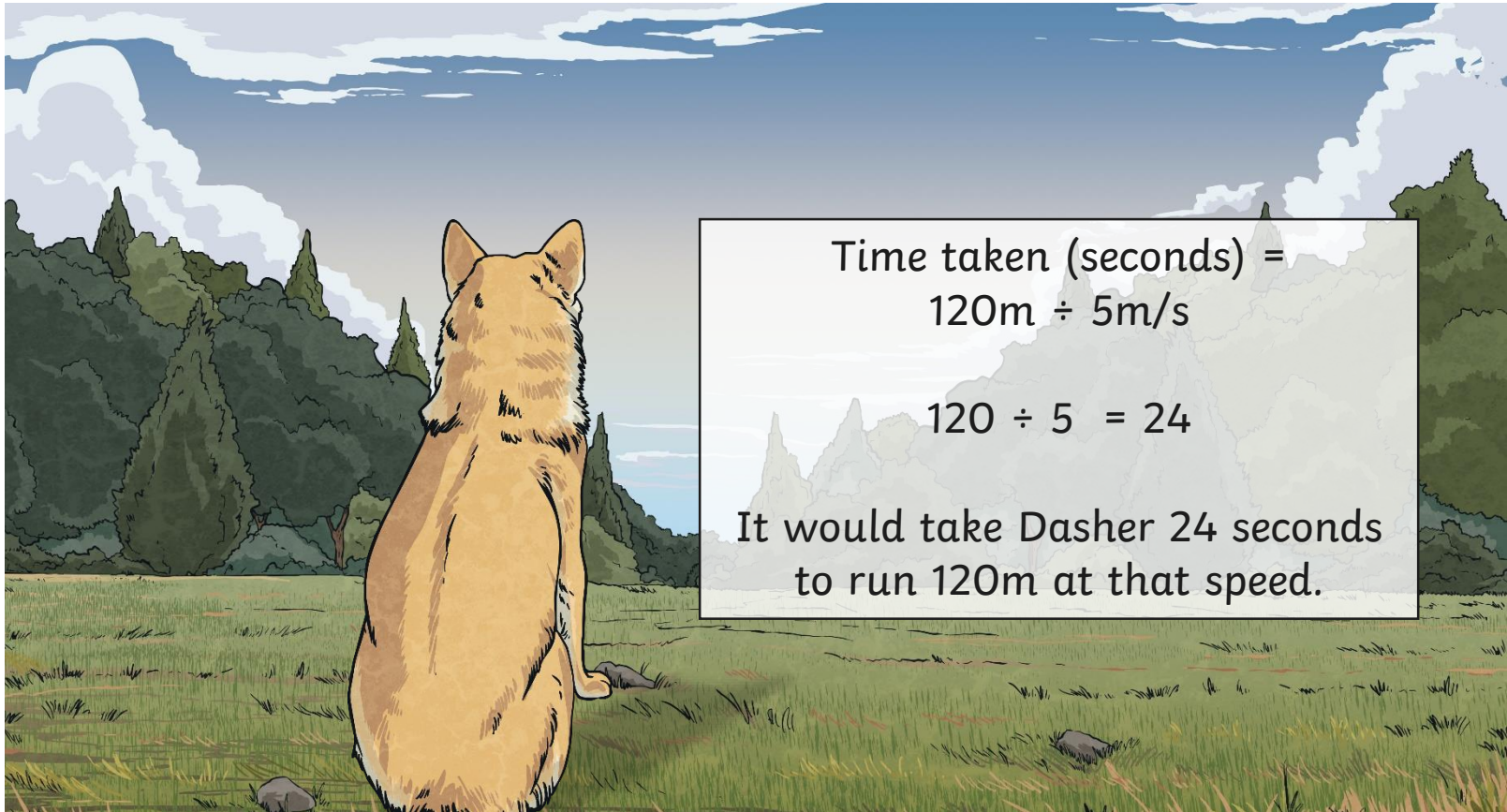
Dasher ran 84m.



# Time



Time taken (seconds) = distance (metres)  $\div$  speed (m/s)  
How long would it take Dasher to run 120m at a speed of 5m/s?

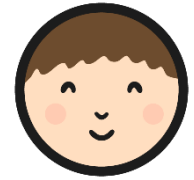


$$\text{Time taken (seconds)} = 120\text{m} \div 5\text{m/s}$$

$$120 \div 5 = 24$$

It would take Dasher 24 seconds to run 120m at that speed.

# Dasher



Use your marvellous maths skills to complete these activities:

4) Write some of your own questions.

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_

I can solve speed, distance and time problems.

When Dasher the dog sees a cat across the park, he is off running at incredible speeds in pursuit of the feline fluffball. Can you work out the answers to these questions using scaling?

Remember: speed (in metres per second)

1) How fast is Dasher dashing?

a) He chases a cat for 13 seconds. He's dashing at \_\_\_\_\_ metres per second.

b) It takes him 3 and a half minutes. He's dashing at \_\_\_\_\_ metres per second.

c) He runs to the other side of the park in 15 minutes. He's dashing at \_\_\_\_\_ metres per second.

2) How far does Dasher get?

a) He runs for 336 seconds at a speed of 2 metres per second.

b) It takes him 2 and a half minutes at a speed of 64 metres per second.

c) He chases a cat for 64 minutes at a speed of 2 metres per second.

3) How long does it take Dasher to run these distances?

a) He runs 640 metres at a speed of \_\_\_\_\_ seconds.

b) He crosses the 144-metre park at a speed of \_\_\_\_\_ seconds.

c) He chases the cat around the park at a speed of \_\_\_\_\_ seconds.

I can solve speed, distance and time problems.

When Dasher the dog sees a cat across the park, he is off running at incredible speeds in pursuit of the feline fluffball. Can you work out the answers to these questions using scaling?

Remember: speed (in metres per second)

1) How fast is Dasher dashing?

a) He chases a cat for 75 seconds. He's dashing at \_\_\_\_\_ metres per second.

b) It takes him 1 minute. He's dashing at \_\_\_\_\_ metres per second.

c) He runs to the other side of the park in 15 minutes. He's dashing at \_\_\_\_\_ metres per second.

2) How far does Dasher get?

a) He runs for 33 seconds at a speed of 2 metres per second.

b) It takes him 2 minutes at a speed of 64 metres per second.

c) He chases a cat for 64 minutes at a speed of 2 metres per second.

3) How long does it take Dasher to run these distances?

a) He runs 64 metres at a speed of \_\_\_\_\_ seconds.

b) He crosses the 144-metre park at a speed of \_\_\_\_\_ seconds.

c) He chases the cat around the park at a speed of \_\_\_\_\_ seconds.

## Dasher

I can solve speed, distance and time problems.

When Dasher the dog sees a cat across the park, he is off running at incredible speeds in pursuit of the feline fluffball. Can you work out the answers to these questions using scaling?

3) What is Dasher's speed?

a) What speed is Dasher running at if he runs 81 metres in 9 seconds?  $81 \div 9 =$  \_\_\_\_\_

b) What speed is Dasher running at if he runs 180 metres in 12 seconds?  $180 \div 12 =$  \_\_\_\_\_

c) What speed is Dasher running at if he runs 240 metres in 15 seconds?  $240 \div 15 =$  \_\_\_\_\_

1) How long does it take him to run these distances?

a) If he runs 30 metres across the park in 9 seconds, how long does it take him to run 60 metres?

Use scaling: if it takes him 9 seconds to run 30 metres and he runs 60 metres (twice as far), it will take him twice as long. It will take him \_\_\_\_\_ seconds.

b) If he runs 55 metres across the park in 11 seconds, how long does it take him to run 110 metres? \_\_\_\_\_ seconds

c) If he runs 50 metres across the park in 24 seconds, how long does it take him to run 25 metres? \_\_\_\_\_ seconds

d) If he runs 100 metres across the park in 40 seconds, how long does it take him to run 25 metres? \_\_\_\_\_ seconds

e) If he runs 250 metres across the park in 50 seconds, how long does it take him to run 25 metres? \_\_\_\_\_ seconds

2) How far has he run?



a) If Dasher sees a cat and chases it for 20 seconds at a speed of 5 metres per second, how far has he run?

He runs 5 metres every second for 20 seconds.  $20 \times 5 =$  \_\_\_\_\_

He must have run \_\_\_\_\_ metres.

b) How far has Dasher run if he chases a cat for 32 seconds at a speed of 3 metres per second? \_\_\_\_\_ seconds

c) How far has Dasher run if he runs at a speed of 2 metres per second for a whole minute? \_\_\_\_\_ seconds

# Switch



You have 1 minute to explain how to calculate speed, distance and time or solve speed, distance and time problems using scaling.



# Aim



- I can solve speed, distance and time problems.

# Success Criteria

- I can use scaling to solve problems.
- I can work out speed by dividing the distance travelled by the time taken to get there.
- I can calculate the distance travelled by multiplying the speed and the time taken to get there.
- I can calculate the time taken by dividing the distance by the speed.

