Maths

Multiplication and Division

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Dasher

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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.

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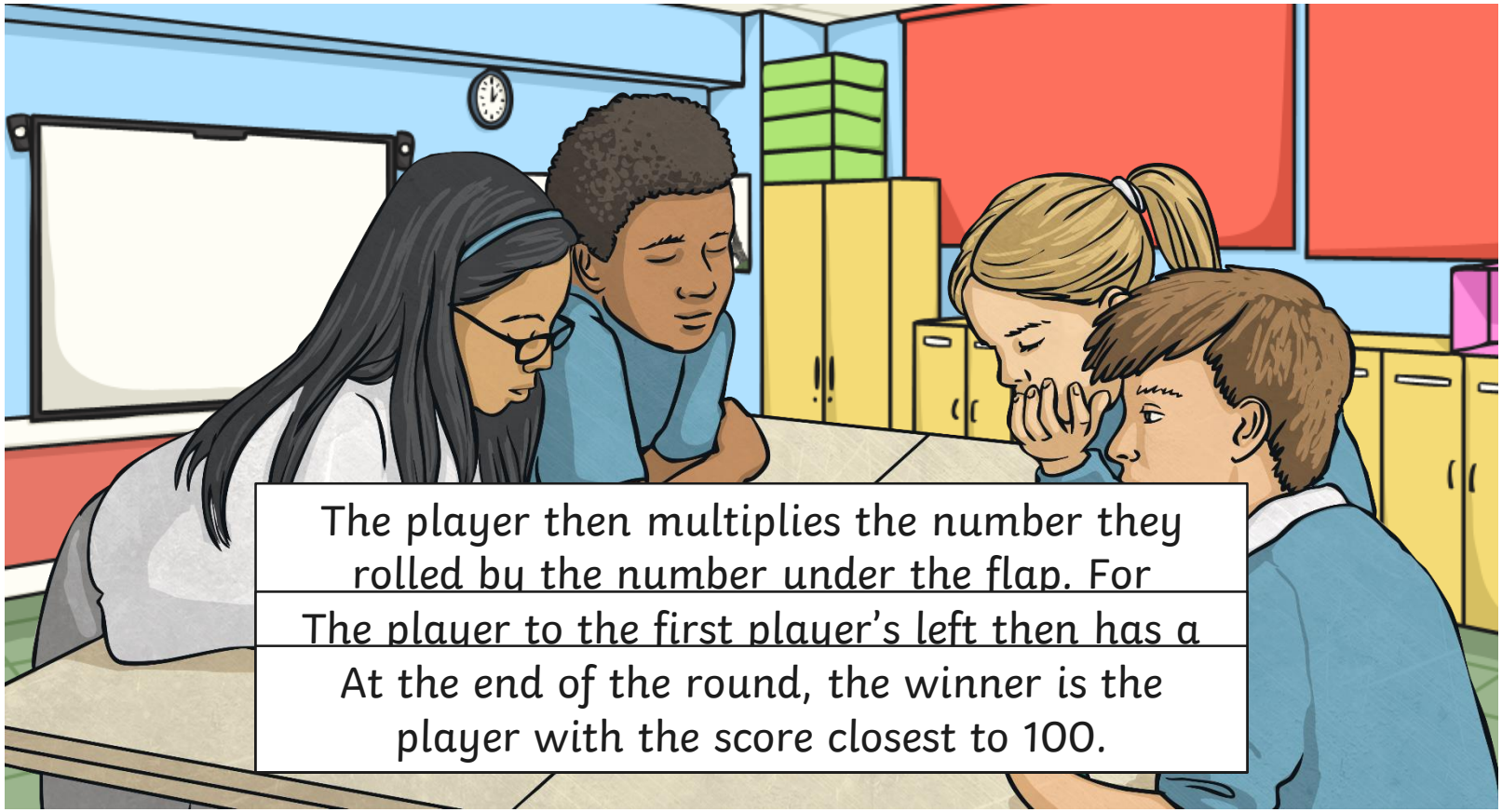
Masterful Multiplication

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



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Dasher the Dog

This is Dasher, my best friend.

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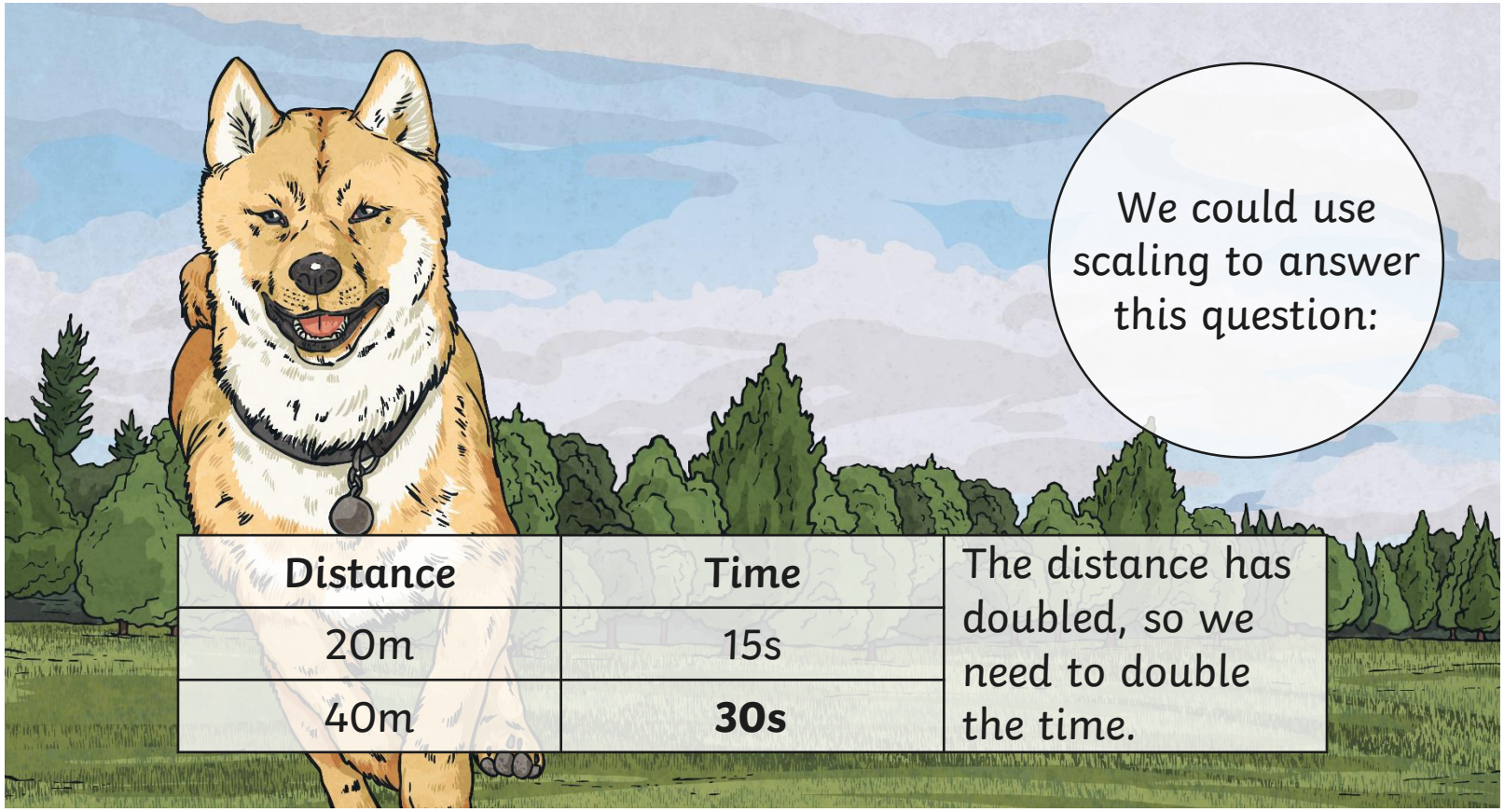
Dasher Dilemmas

Whole Class

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



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

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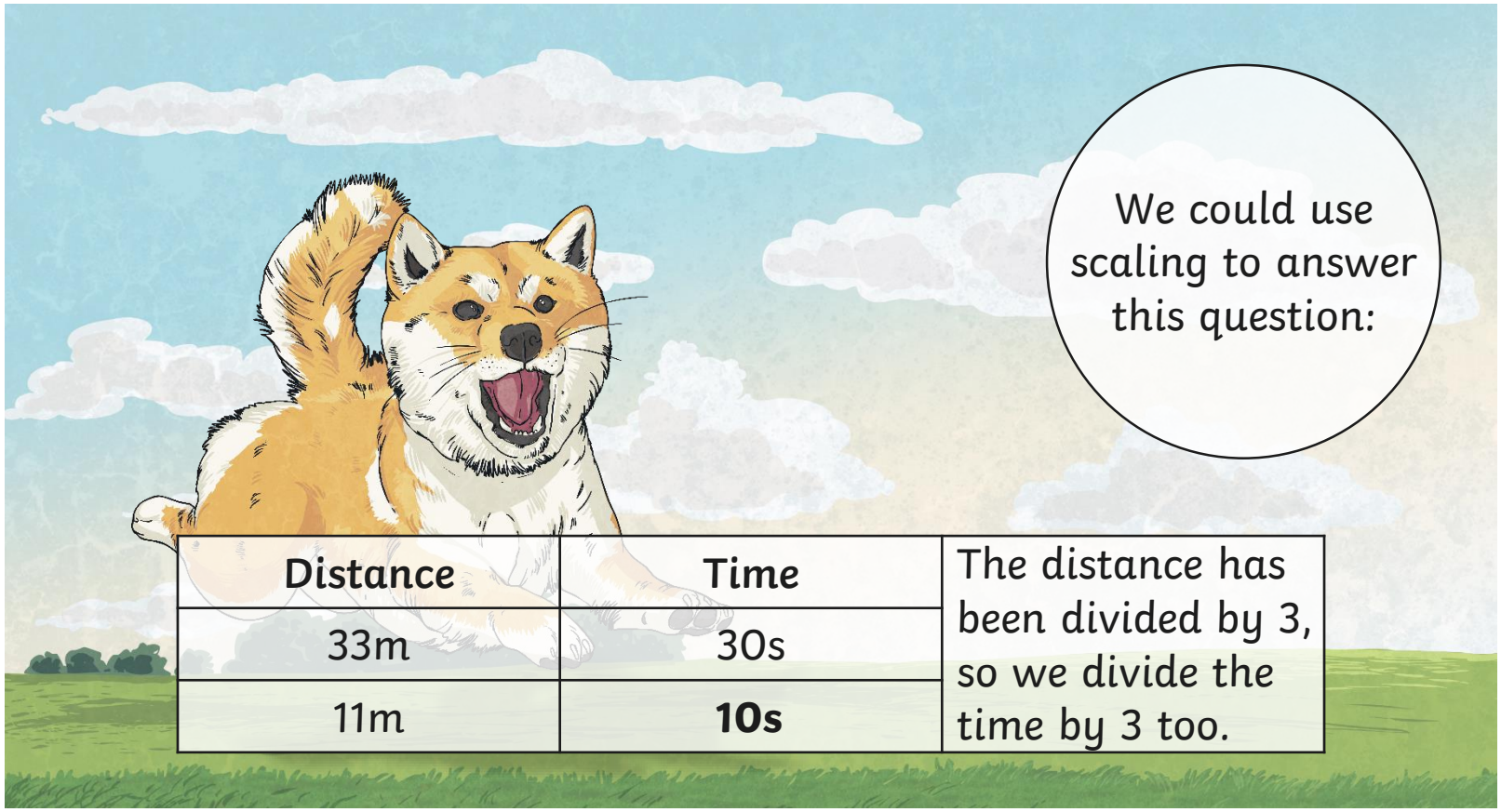
Dasher Dilemmas

Whole Class

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
33m	30s
11m	**10s**

The distance has been divided by 3, so we divide the time by 3 too.

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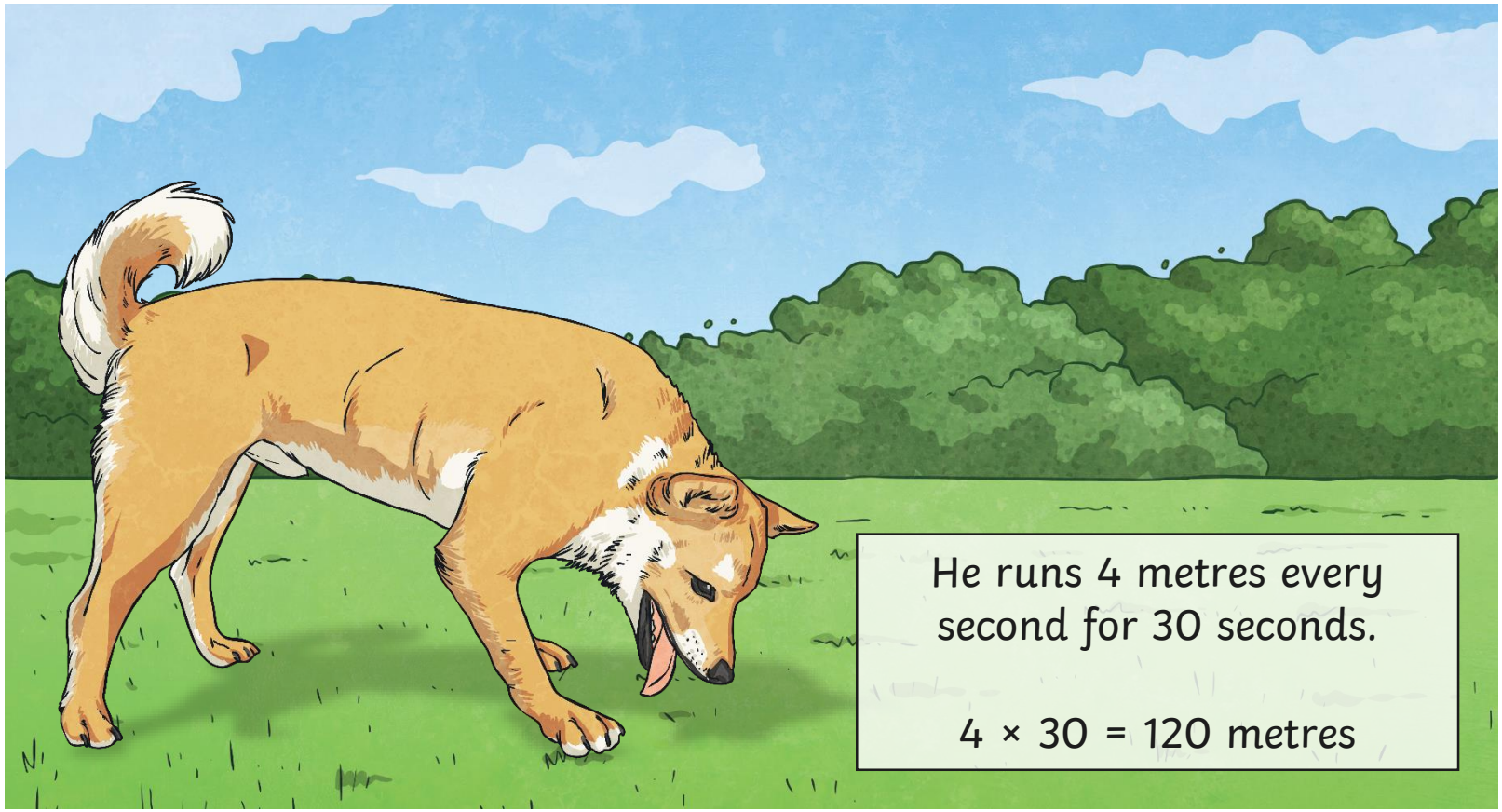
Dasher Dilemmas

Whole Class

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 × 30 = 120 metres

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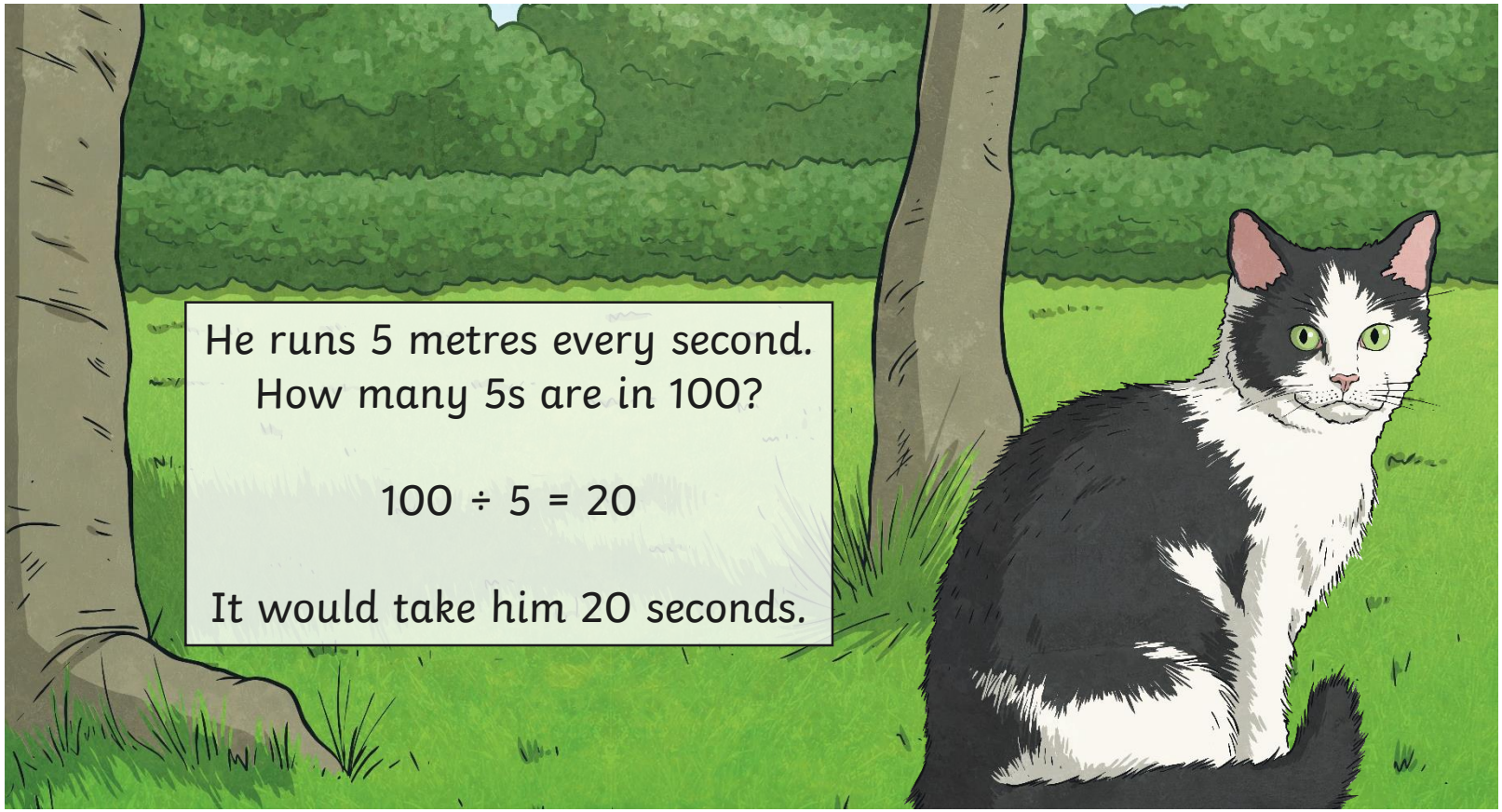
Dasher Dilemmas

Whole Class

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



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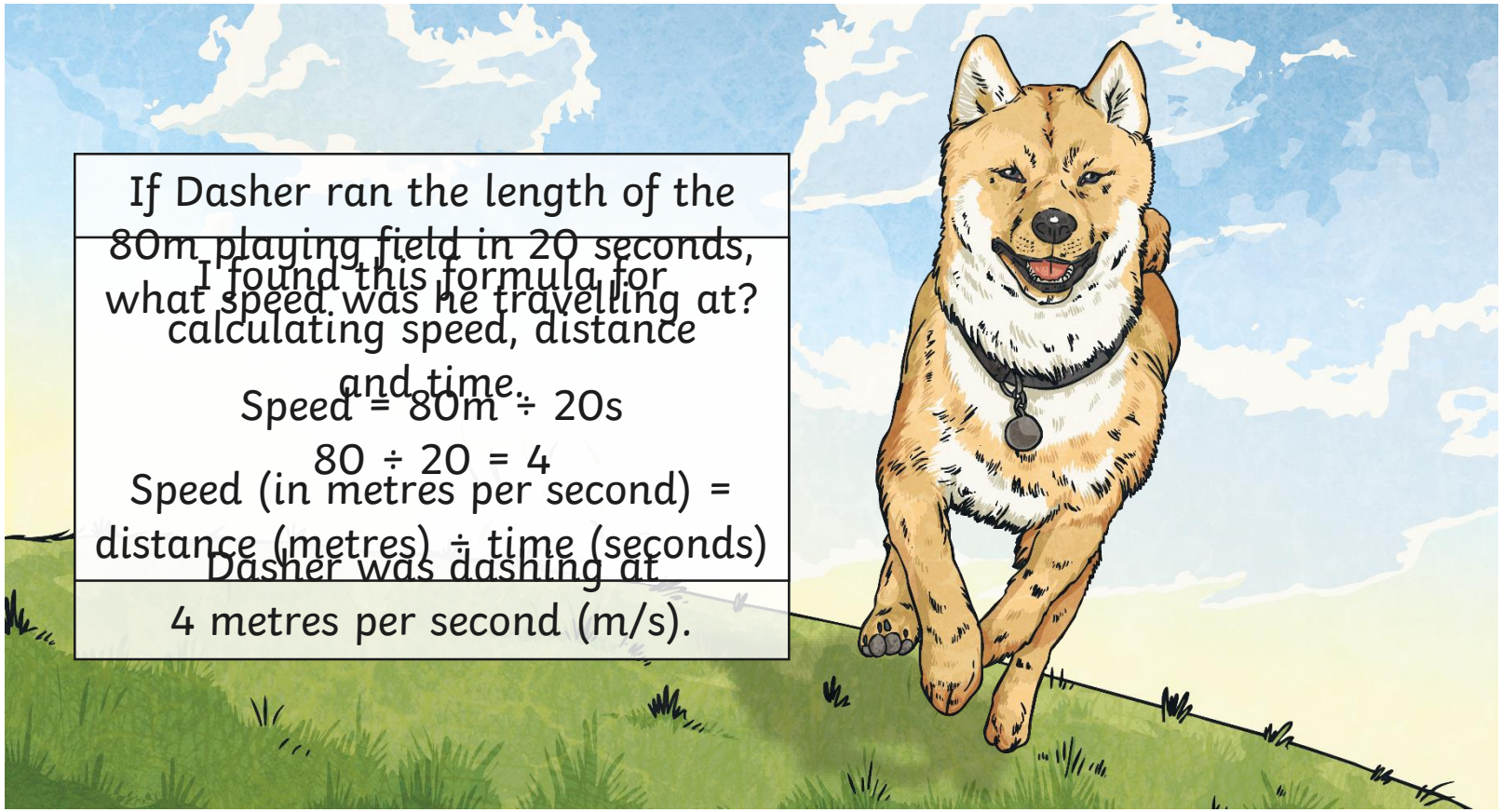
Speed

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.

Speed = 80m ÷ 20s

80 ÷ 20 = 4

Speed (in metres per second) = distance (metres) ÷ time (seconds)

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

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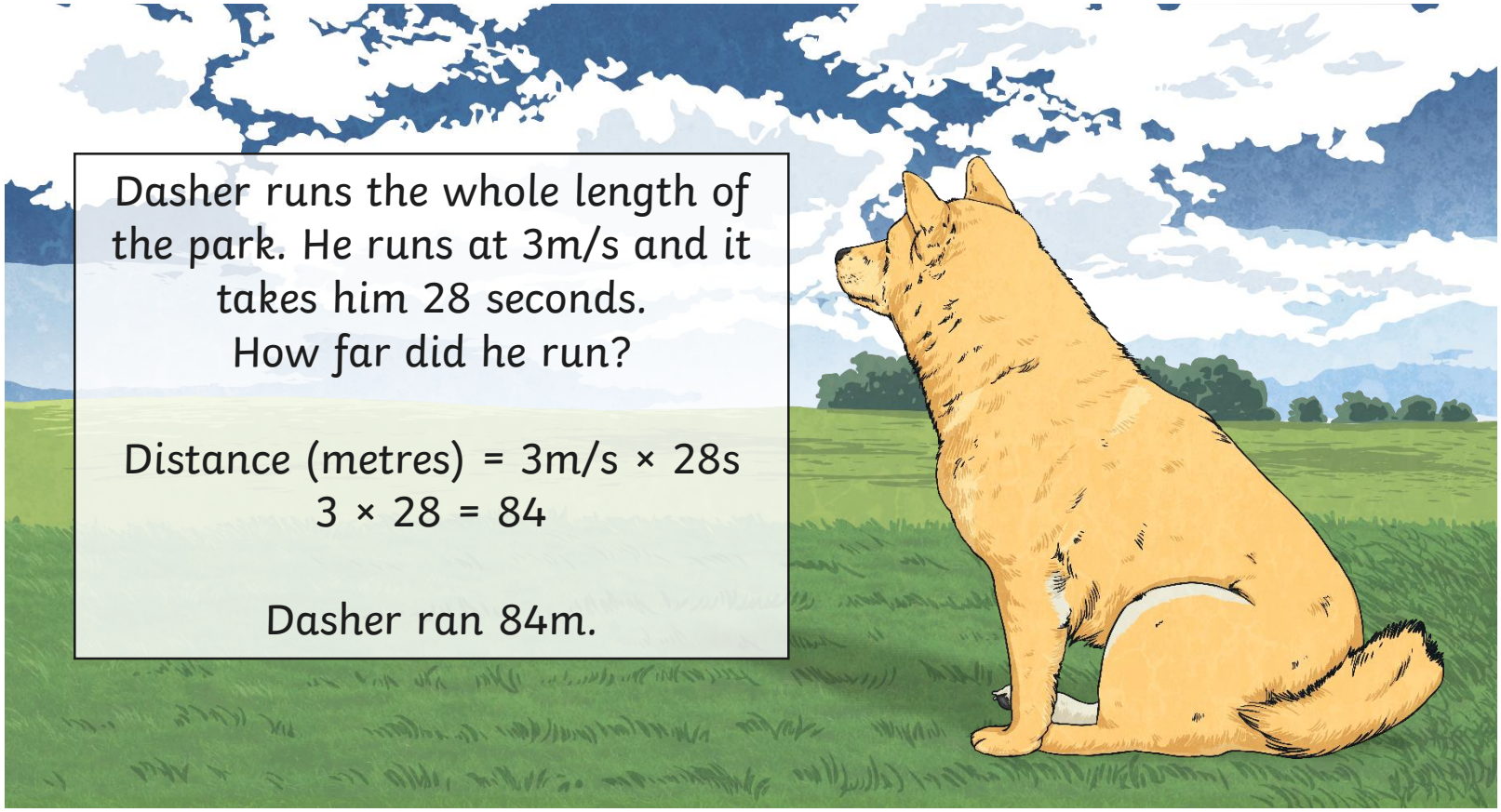
Distance

Whole Class

Distance (metres) = speed (m/s) × 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?

Distance (metres) = 3m/s × 28s
3 × 28 = 84

Dasher ran 84m.

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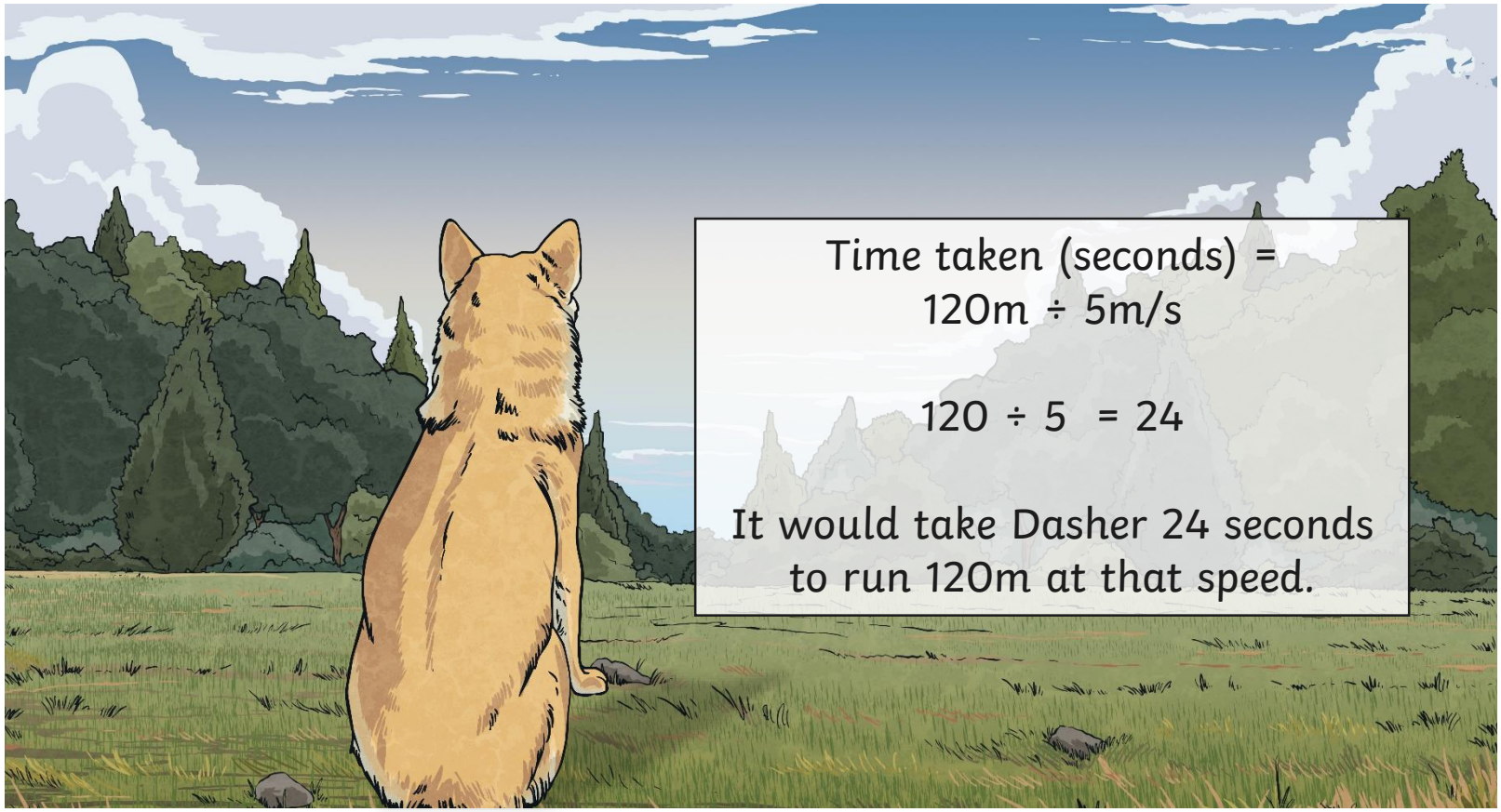
Time

Whole Class

Time taken (seconds) = distance (metres) ÷ speed (m/s)

How long would it take Dasher to run 120m at a speed of 5m/s?



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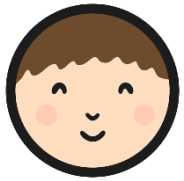
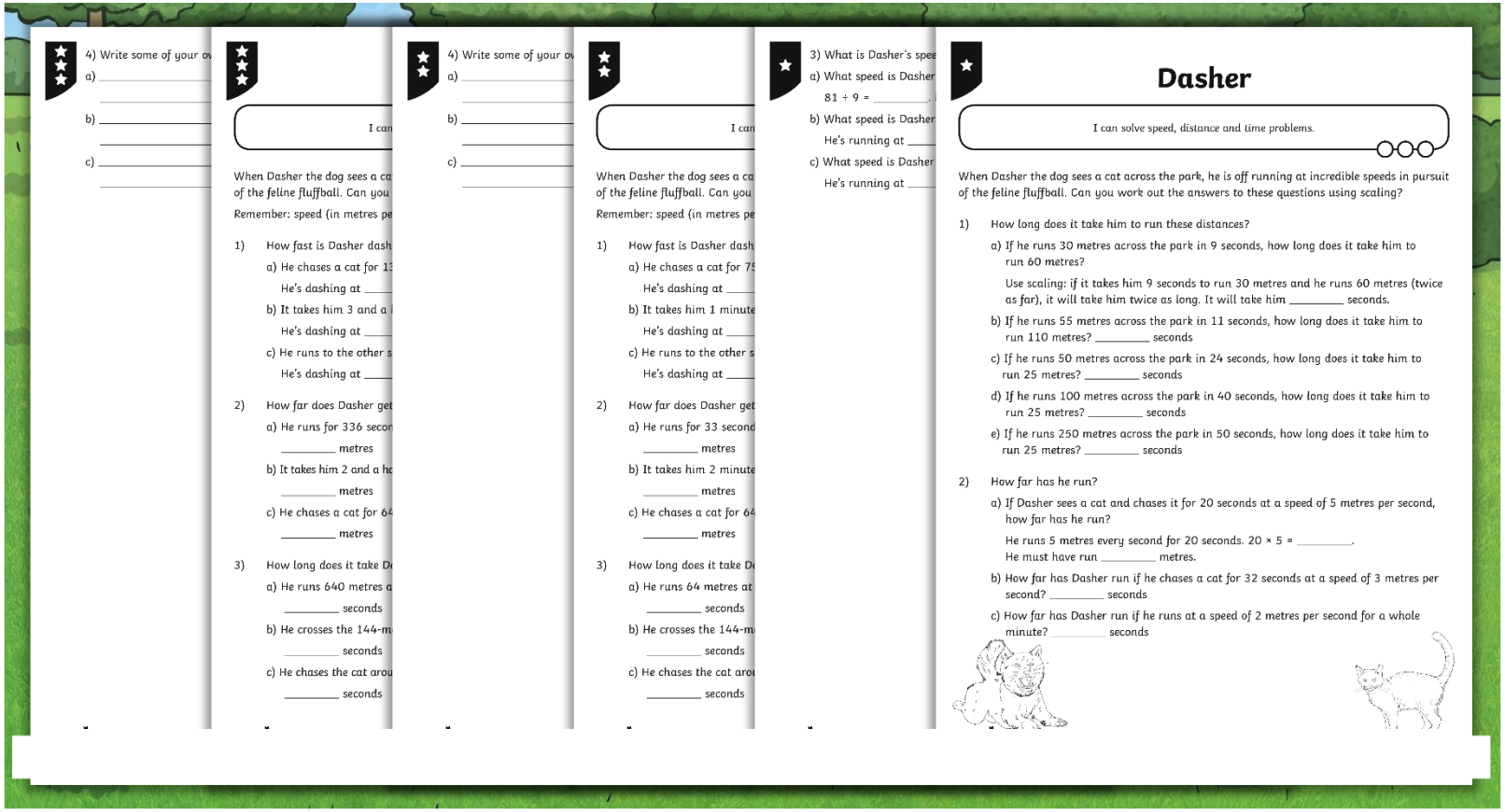
Dasher



Use your marvellous maths skills to complete these activities:



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?

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 × 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

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Switch

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

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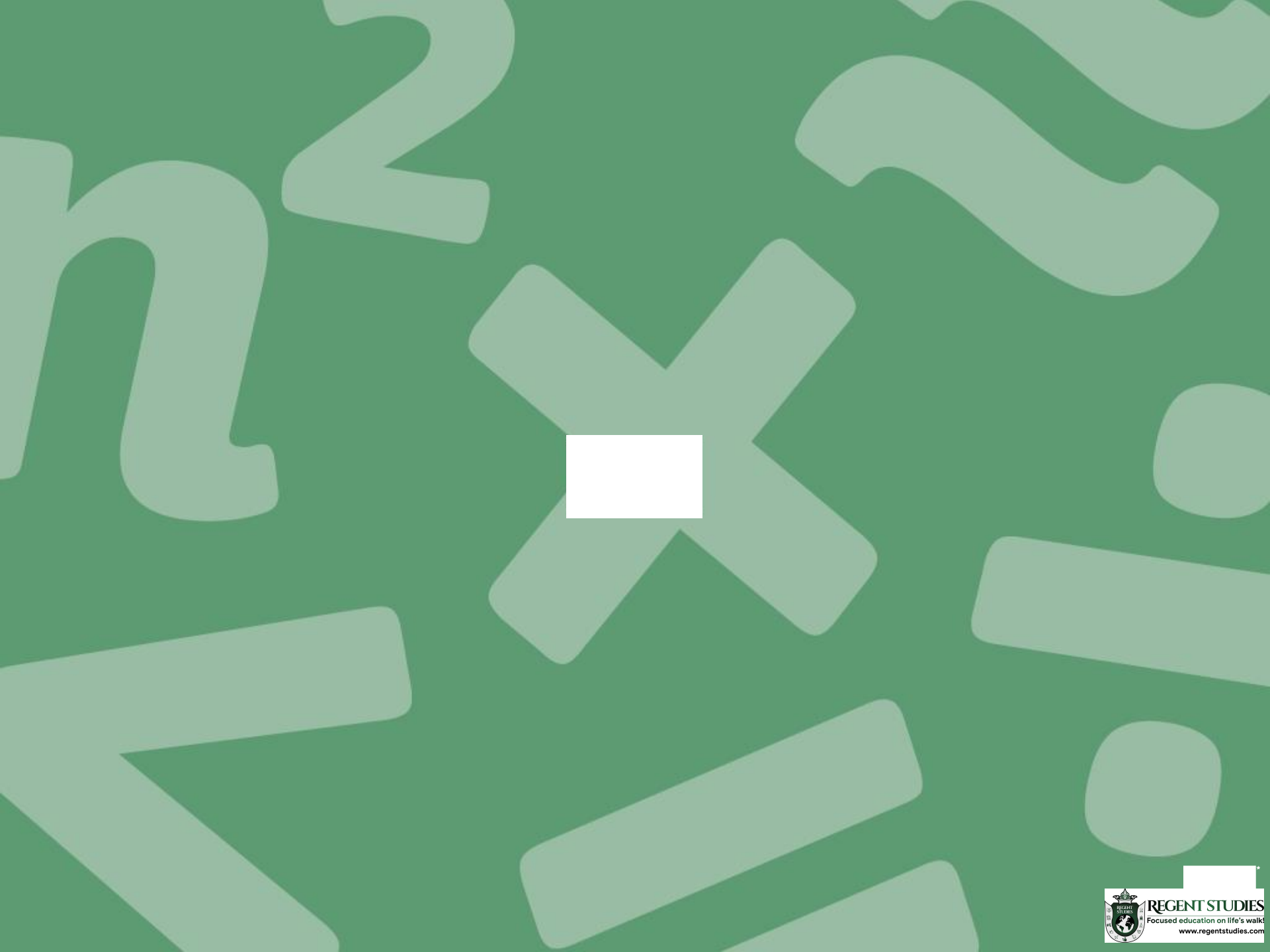

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