THE 2021 YOUNG MATHEMATICAL STORY AUTHOR (YMSA) COMPETITION

THE CINDY NEUSCHWANDER AWARD

(THE 12-15 YEARS OLD CATEGORY)

SHORTLISTED

‘How to Calculate Travel Distance & Time’ by Hannah Hunt (13 years old)

at Dulwich College Beijing (China)

You can read the author’s inspiration for the story and the judges' comments on:

www.mathsthroughstories.org/ymsa2021

#YMSAMaths

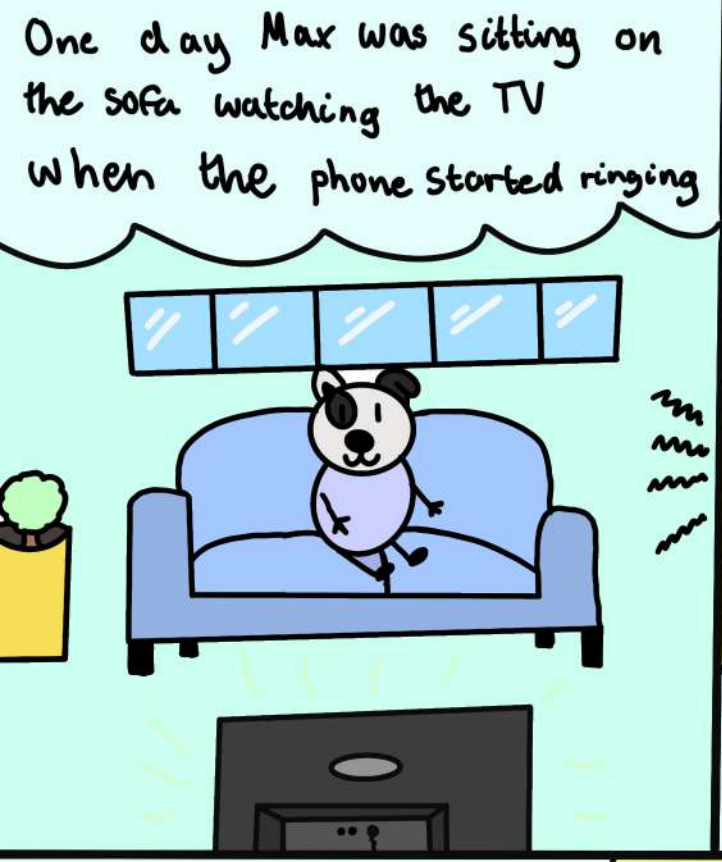
How to calculate travel distance & time

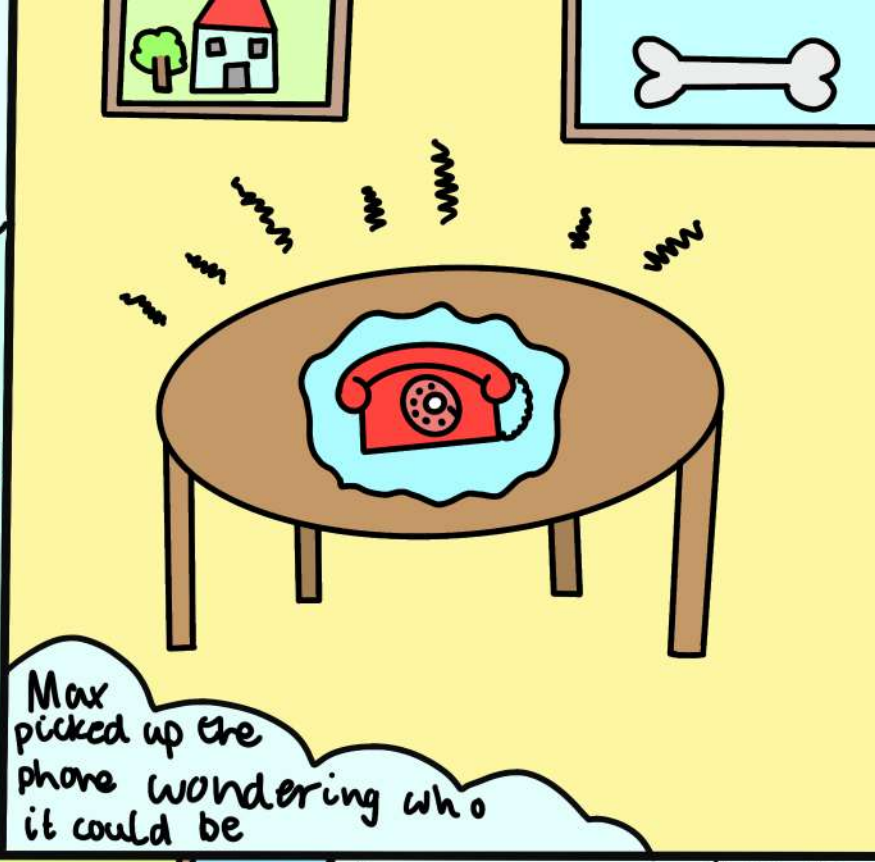
By Hannah Hunt DCB

Are we there yet?

Cover

One day Max was sitting on the sofa watching the TV when the phone started ringing





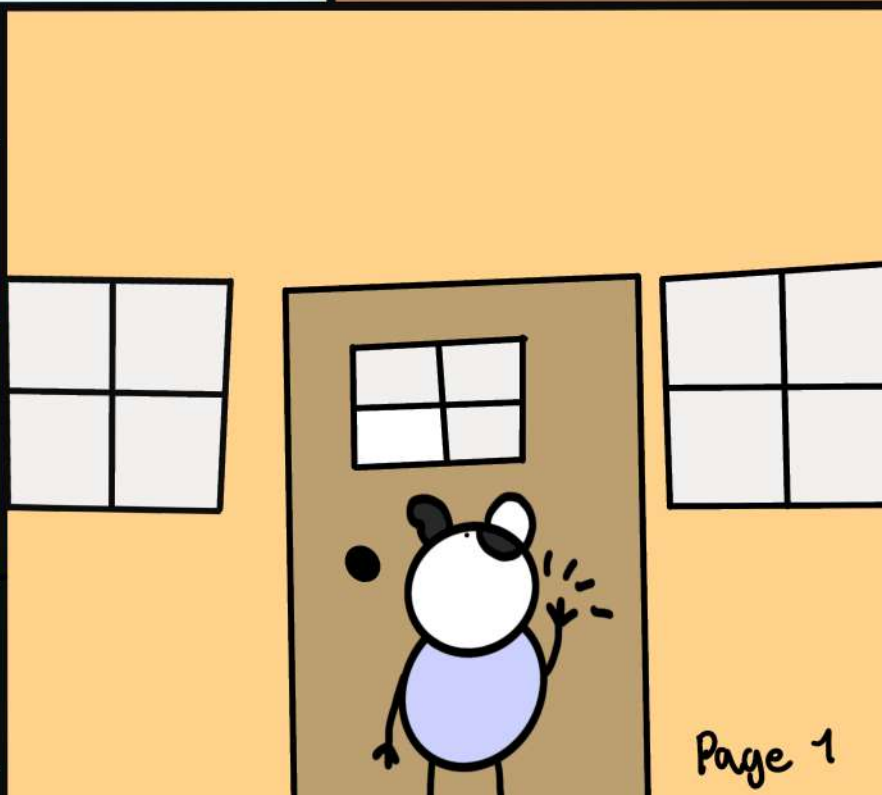
Max picked up the phone wondering who it could be

Hello
Hello
I was wondering if you wanted to go to the fair with all our other friends

That would be lovely
I will be there in 10 minutes

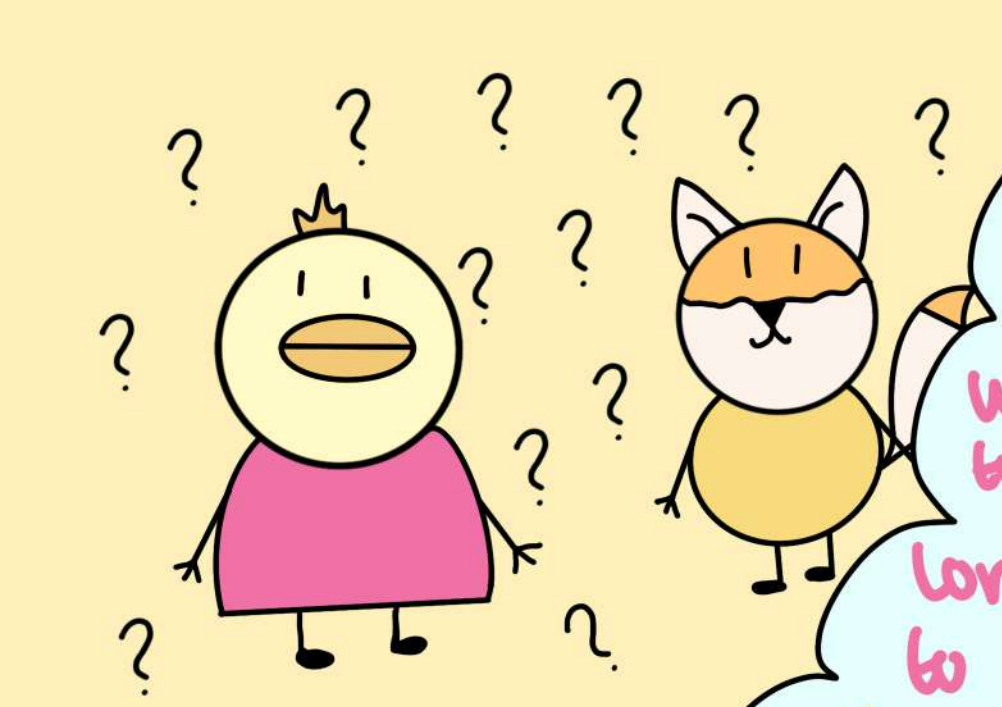
Max was very exited to go to the fair

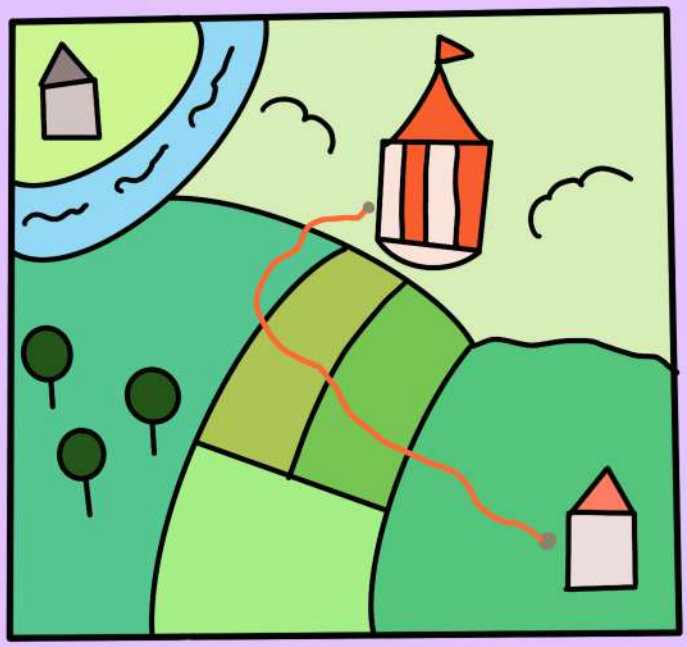
Max arrived at Jims house and knocked on his door

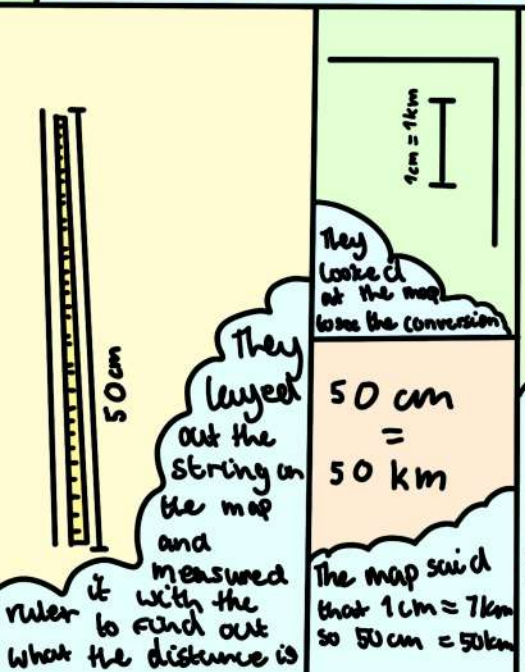


Page 1

Jim
Alex
Tilly
Sally
All his friends where waiting inside for him
I have a question How long is it going to take us to get to the fair
I dont know, Lets go ask my Mum
Mum? How long is it going to take us to get there?
I dont know Jim how about you and your friends go and find out
And that is exactly what they did. They got a map of the town, a piece of string, a couple pieces of paper, a few pencils and a ruler so they could figure it out.
Firstly they got the map and drew out
all the different paths they could take.
Then they had to
figure out the formula.
I know we learnt in Maths that to find distance you do speed x time
But we are trying to find time so we have to do time = distance / speed



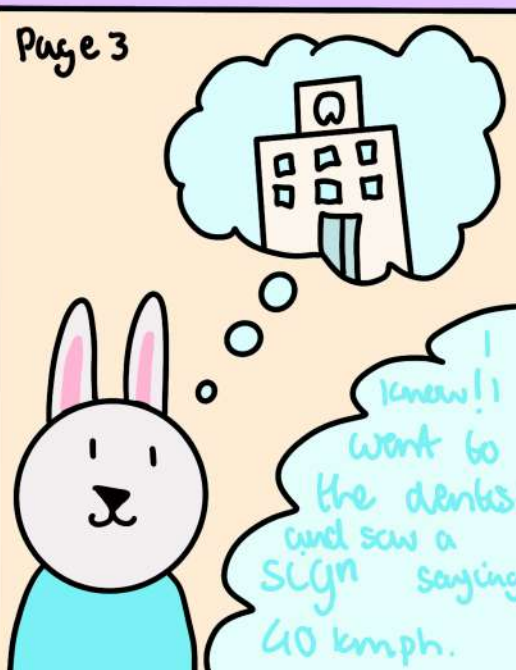




time = 50 km / ? kmph

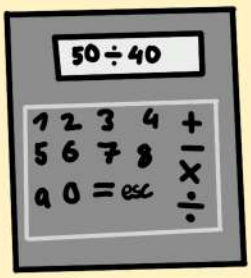
Now all they needed was the speed limit of all the towns main roads. How where they going to find it?

Page 3



$$\text{time} = \frac{50\text{ km}}{40\text{ kmph}}$$

Now they knew all they needed to know. They could finally work out the first road.



$= 1.25$

Together, they put the equation into the calculator. They got 1.25. That can't be right can it 1.25 hours. Makes no sence.

15 mins $= \frac{1}{4}$ of (L)

$25 = \frac{1}{4}$ of 100

I know, the 1 of 1.25 = 60 mins so, if 15 $= \frac{1}{4}$ of 60 mins and 25 $= \frac{1}{4}$ of 100

Then the 0.25 must = 15 mins

Then we add it all together.

$$\frac{50\text{ km}}{40\text{ kmph}} = 1\text{h } 15\text{ mins}$$

So, if the 1 = 60 mins and the 0.25 = 15 mins then 50 km ÷ 40 Kmph should = 1h 15 minutes

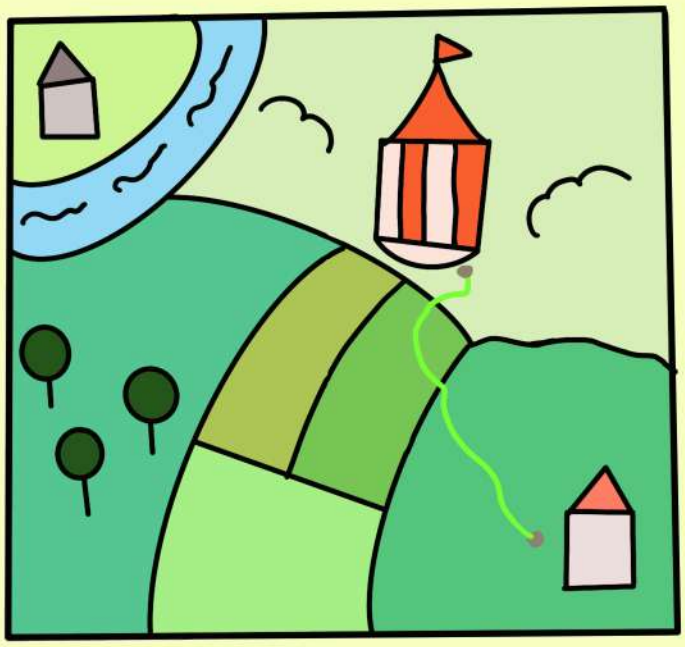
Yay

Wow! They had done it, they had figured out how long it would take them to get to the fair if they took the first road. They were all proud of each other.

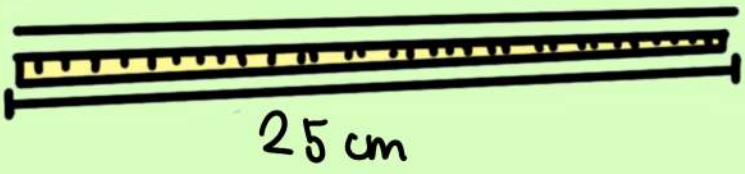
Page 4

- Road 1 ☑
- Road 2 ☐
- Road 3 ☐

Now they had completed the first road they only had to calculate 2 more roads to see with one they should take to the fair.



They repeted each step starting with putting the string on the map.



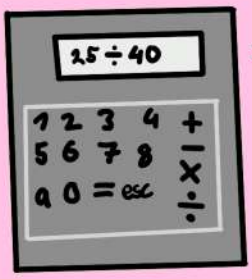
They then measured that string using a ruler. It measured 25 cm.

$$25\text{ cm} = 25\text{ km}$$

If the string was 25 cm and 1cm = 1km then the leangth of the road would be 25km.

$$\frac{25\text{ km}}{40\text{ kmph}}$$

Now they have to divide distance by speed.



$= 0.75$

so Sally typed 25 ÷ 40 into the calculator but, before they got the answer there was one more step.

They had to convert it into minutes. If $0.75 = \frac{3}{4}$ then 45 minutes must be the answer.

$$0.75 = \frac{3}{4}$$

$$45\text{ min} = \frac{3}{4}$$

Road 1 = 1h 15 mins
Road 2 = 45 mins

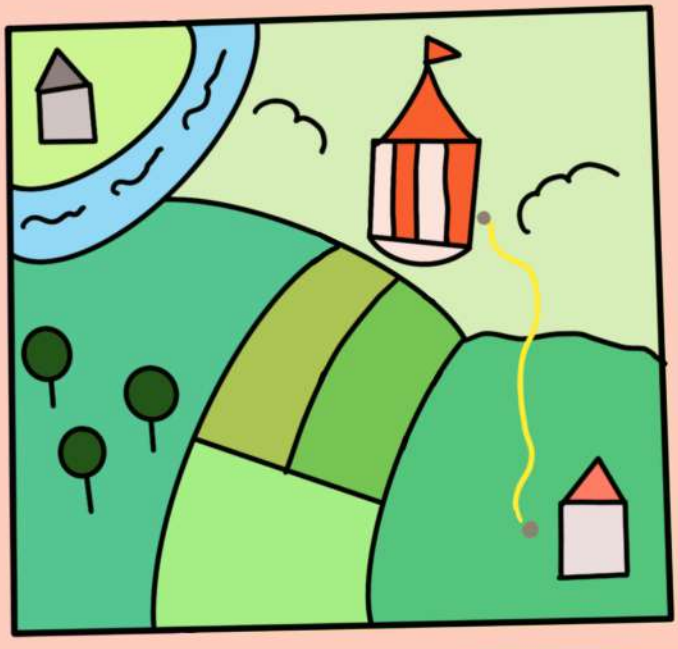
They did it again they had figured out how long it would take them if they took Road 2.

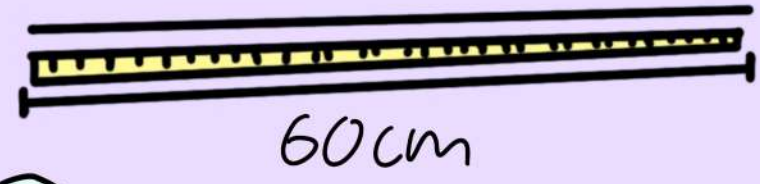
The < goes to the smaller one

Road 1 < Road 2

Road 2 ? Road 3

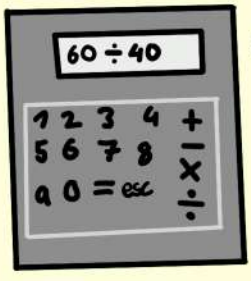
Between Road 1 and Road 2, Road 2 would be the better road to take, but they still had to calculate Road 3 to find the best Road to take.





60cm

They repeated the steps again. They put the rope on the map then measured it.



=1.5

The string measured 60 cm with = 60 km. They typed the equation into the calculator.

$60 \div 40 = 1.5$

but

60 km ÷ 40 kmph

=

1h 30 mins

Now they have to put 1.5 into minutes.

1.5 = 1 h 30 minutes.

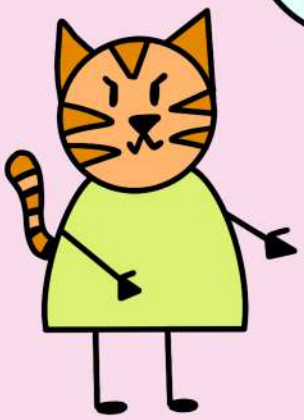
Road 1 < Road 2

Road 2 > Road 3

Road 2

Finally they figured out which road took the shortest amount of time. Road 2 was the best.

After they finished the calculations Jim ran into the kitchen to show his mum all the work he had done. He showed her that they used the equation time = $\frac{\text{distance}}{\text{speed}}$. Then he showed her the times of all the roads.



$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

Road 1 = 1h 15 min

Road 2 = 45 min

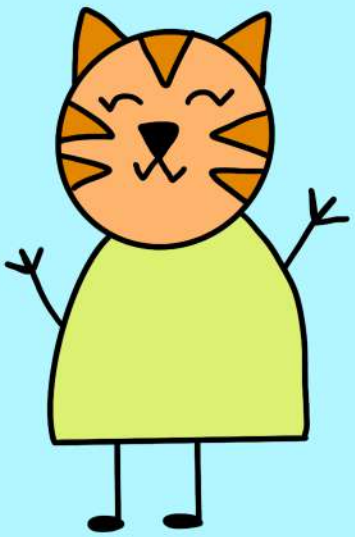
Road 3 = 1h 30 min

Road 1 < Road 2

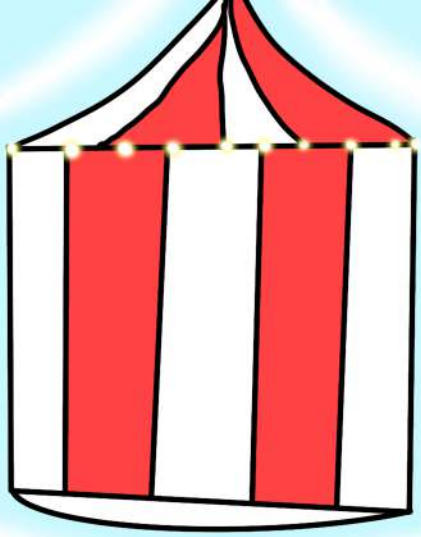
Road 2 > Road

Road 2 is the quickest

Finally he showed her wich road would be the best road to take. She was impresed and proud of them for finding out wich road they should take to the fair.



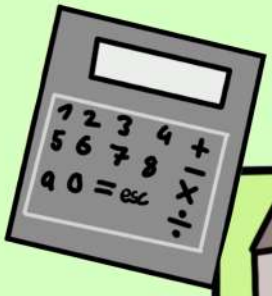
Now they could set of for the fair using road 2 to get there since this road would insure they would have more time to enjoy having fun on the rides.

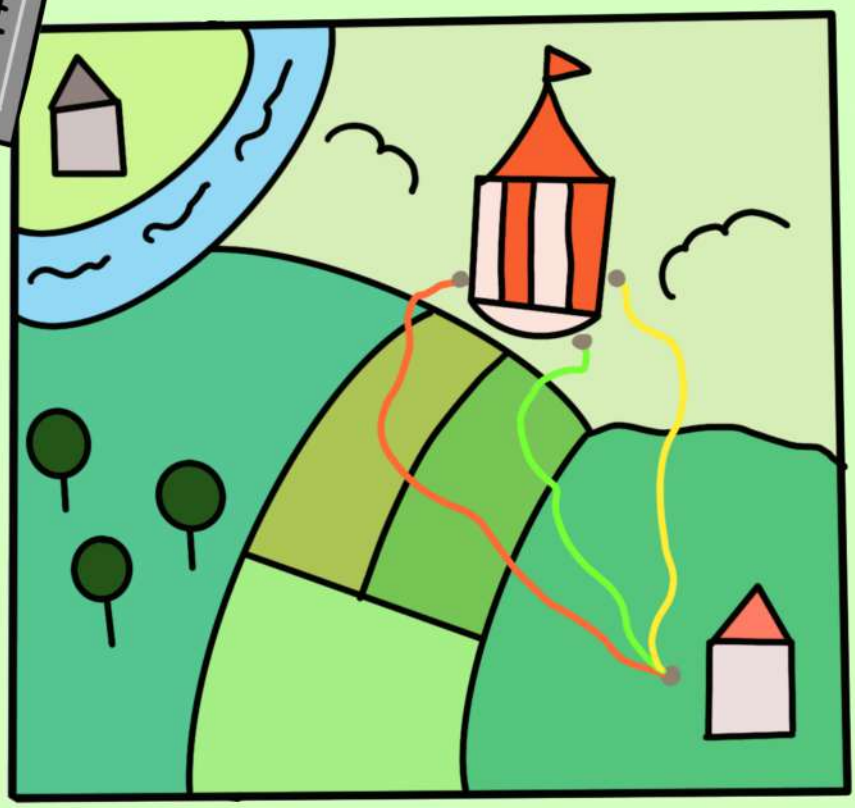


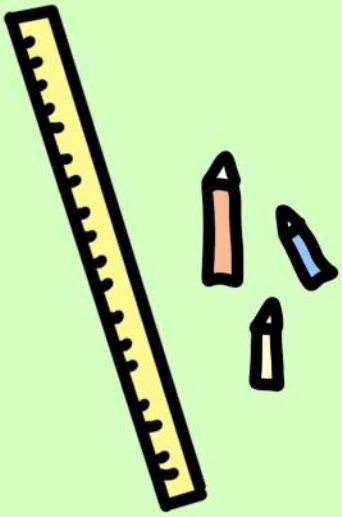
Beep Beep

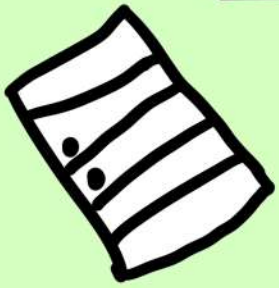
They got into the car and set of for the trip. Max and his friends had the best time at the fair.

The End









In this story you will learn about 5 animal friends that use a map and a piece of string to calculate how long it is going to take them to get to the fair.

back cover