Maths

Multiplication and Division

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Doubling and Halving

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Aim

- I can use halving and doubling as a strategy for mental multiplication and division.

Success Criteria

- I can halve numbers by dividing them by 2.
- I can double numbers by multiplying them by 2.
- I can use partitioning to halve and double larger numbers.
- I can create and continue halving and doubling sequences.

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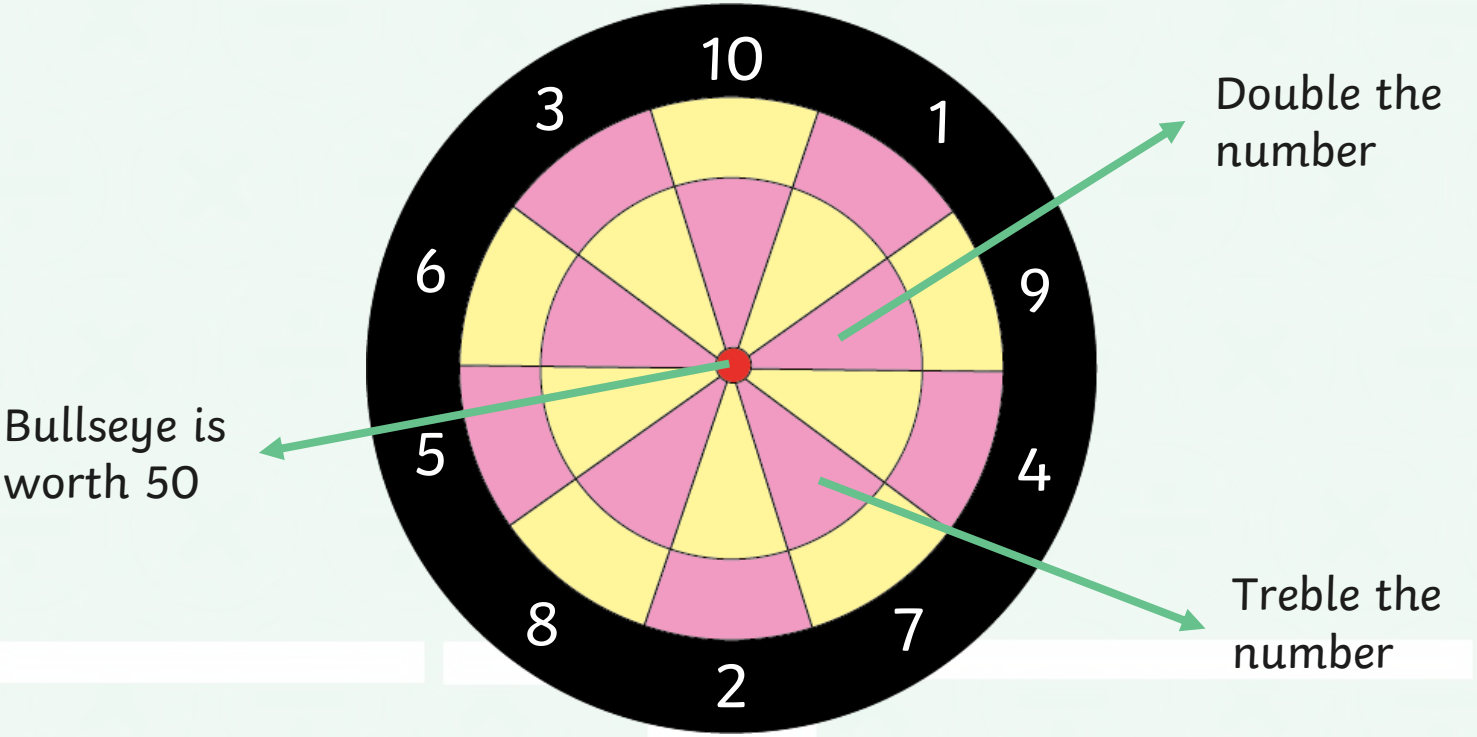
Darts

There are two teams. Are you a red or a blue?

Add up the score from your three darts. Don't forget to double or treble the numbers if you need to!



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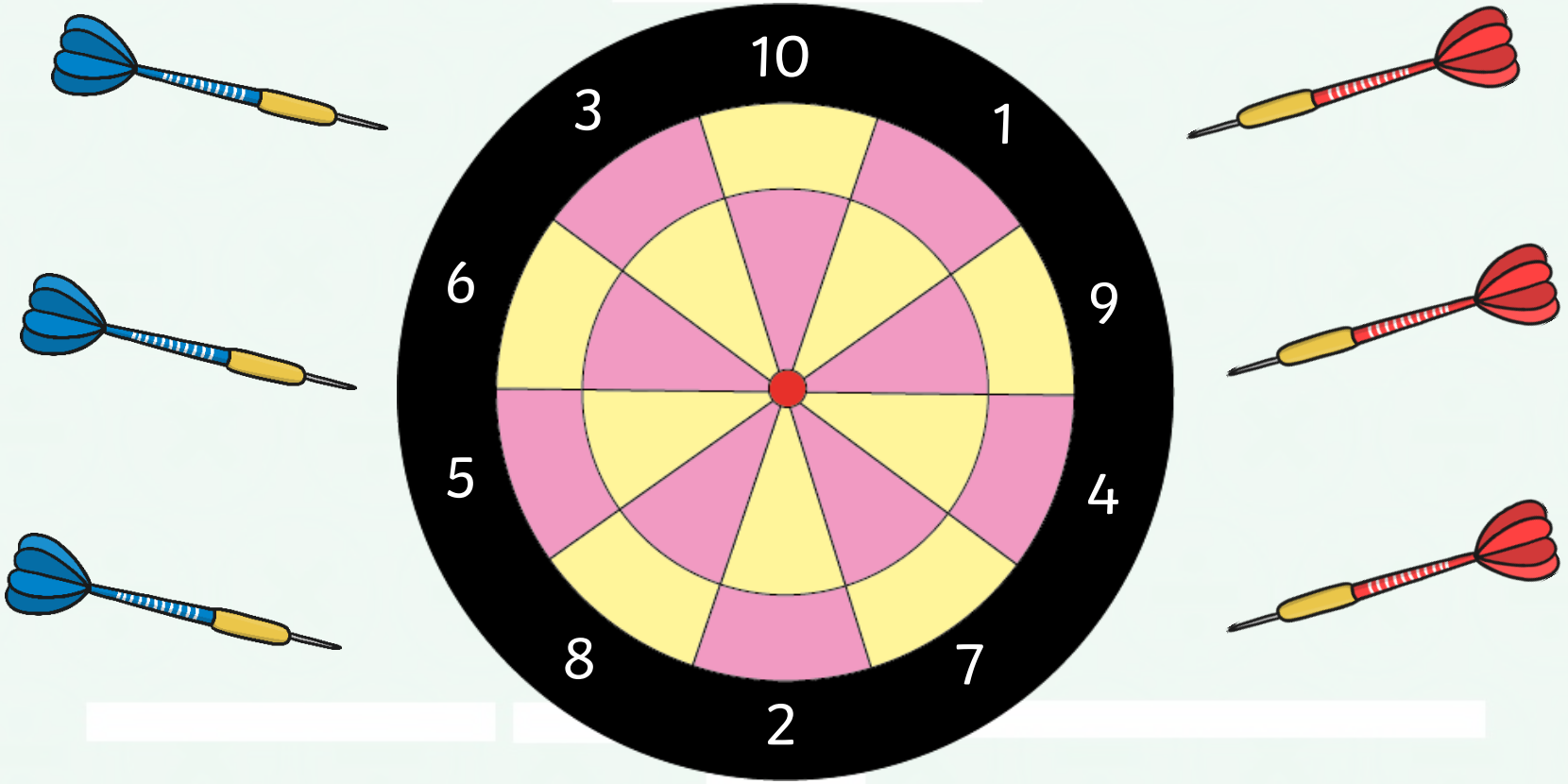
Darts

Click a dart to throw it.



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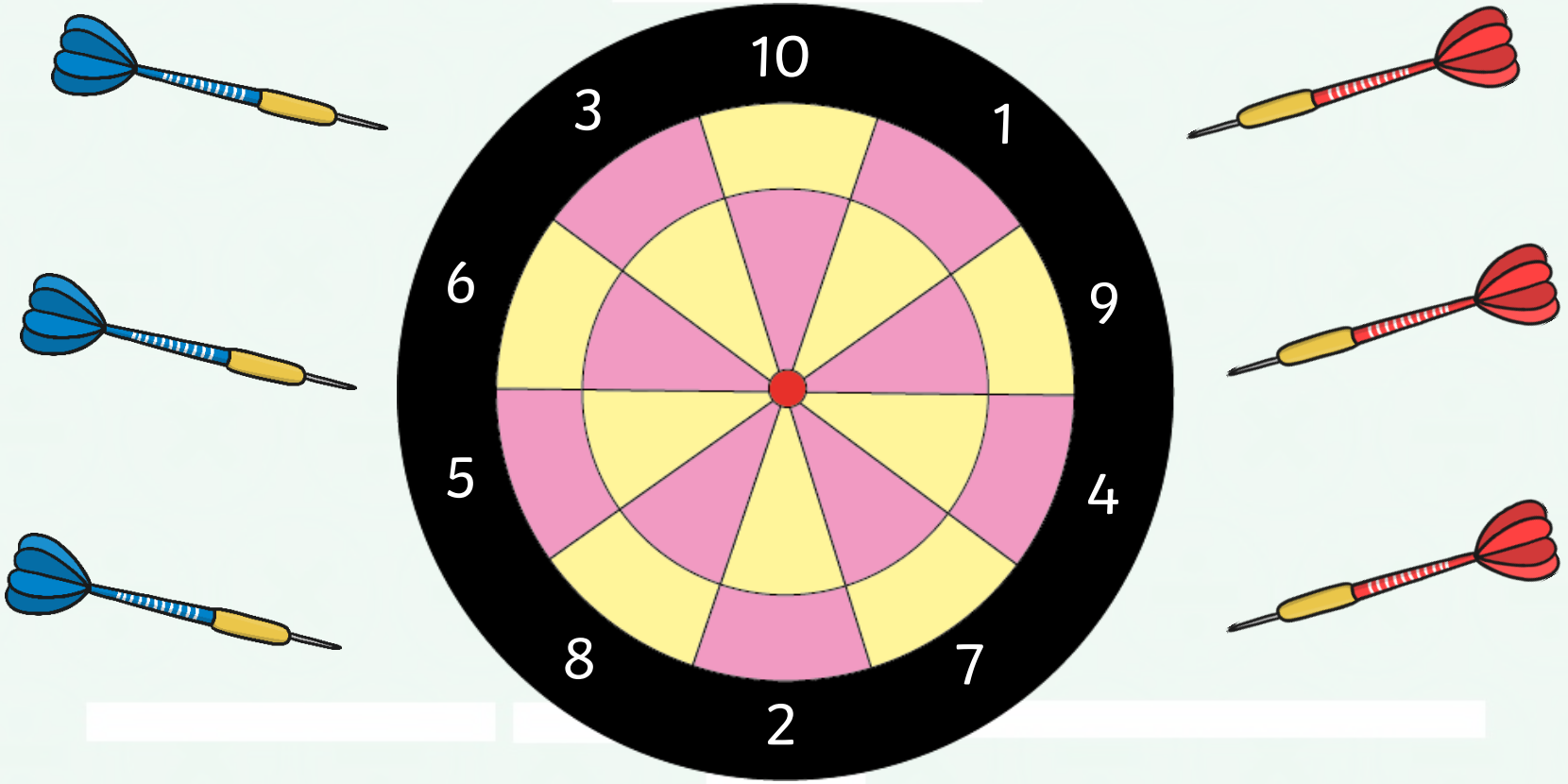

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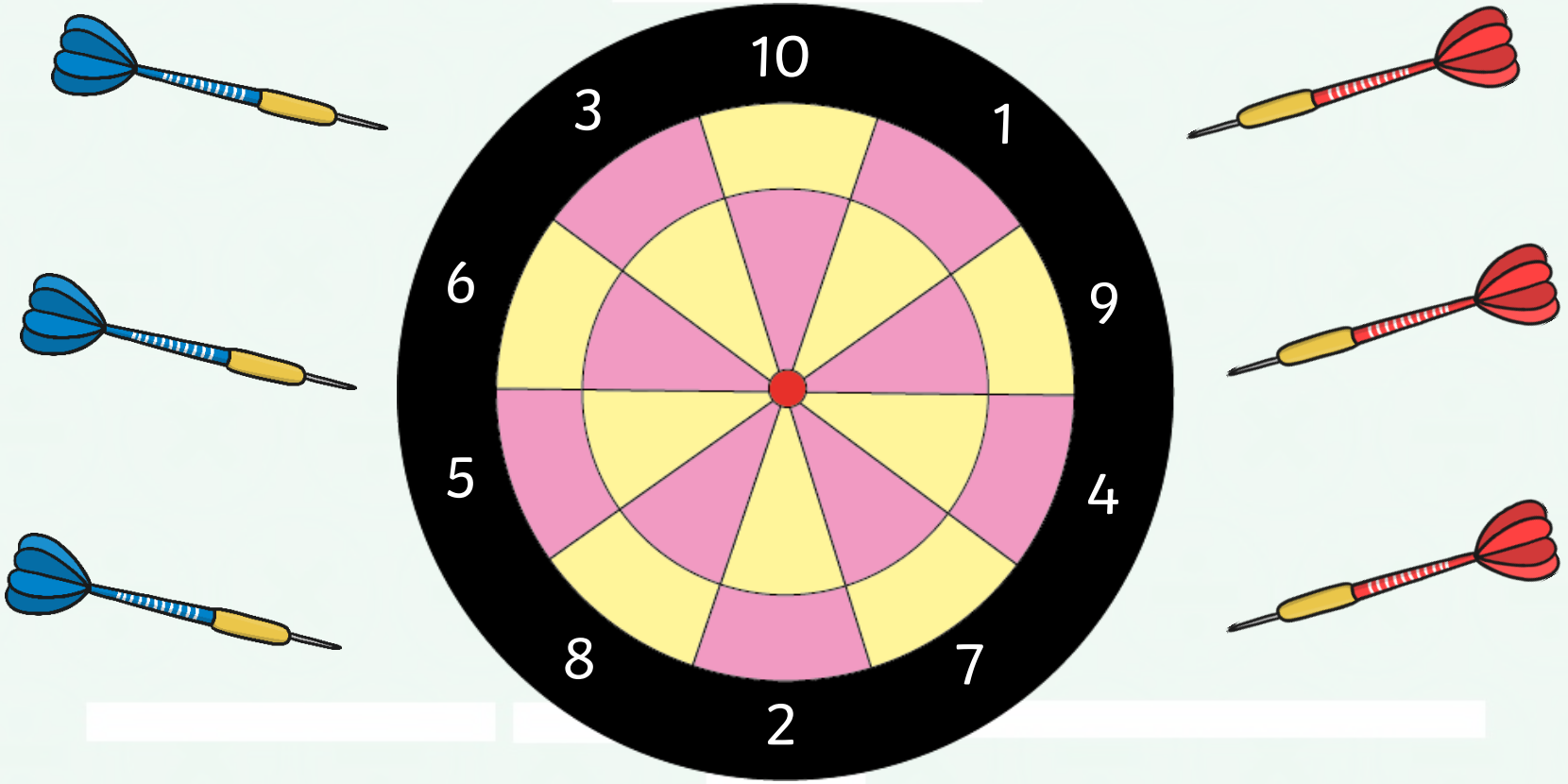

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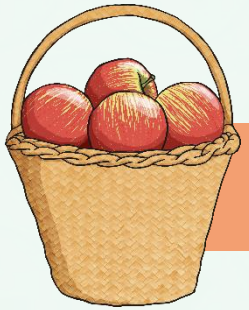
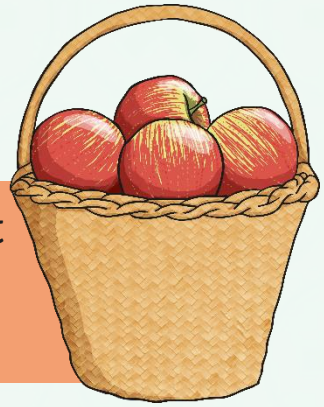
Doubling



This basket contains 12 apples.

This basket has double the amount of apples. It is twice as big. How many apples does it contain?



To double something, you multiply it by 2.

What is the number sentence for this calculation?

$2 \times 12 = 24$

This is easy, but what if the numbers are larger?

Can doubling help us then?

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Doubling

How would you double 63?

You could partition the number into tens and ones.

63 = 60 and 3

Double 60 = 120

Double 3 = 6

Finally, recombine the numbers.

120 + 6 = 126

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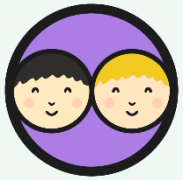
Doubling by Partitioning



Now try doubling these numbers by partitioning them.

Bronze	Silver	Gold
1. 28 = 56 2. 64 = 128 3. 86 = 172	1. 124 = 248 2. 87 = 174 3. 240 = 480	1. 264 = 528 2. 327 = 654 3. 740 = 1480

Did you get them right?

If not, can you work out where you went wrong?

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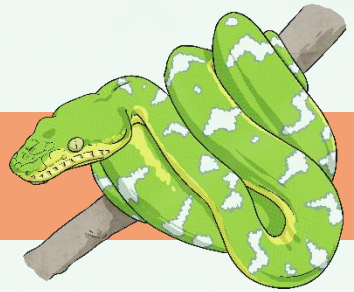
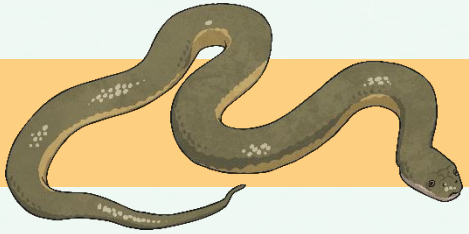
Halving



This snake is 3m long.

This snake is half as long.



To halve something, we divide it by two.

What is the number sentence for this calculation?

3m ÷ 2 = 1.5m

This is easy, but what if the numbers are larger?
Can halving help us then?

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Halving

How would you halve 66?

Partition the number into tens and ones.

66 = 60 and 6

Half of 60 or 60 ÷ 2 = 30

Half of 6 or 6 ÷ 2 = 3

Finally, recombine the numbers.

30 + 3 = 33

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Doubling and Halving Activities

Doubling and Halvin

I can use halving and doubling as a strategy for mental multiplicati

1. **Double it**
   - You will need a set of digit cards 0-9.
   - Turn over two cards to make a two-digit number.
   - Double it.
   - Write out the calculation in full like the one below:
     52 × 2 =
     (50 × 2) + (2 × 2) =
     100 + 4 = 104
   - Repeat this activity ten times.

5

2. **Halve it**
   - You will need a set of digit cards 0-9.
   - Turn over two cards to make a two-digit number. The ones digit m
     keep turning cards over until your two-digit number ends with 0,
   - Halve it.
   - Write out the calculation in full like the one below:
     64 ÷ 2 =
     (60 ÷ 2) + (4 ÷ 2) =
     30 + 2 = 32
   - Repeat the activity ten times.

3. **Sequences**

   Fill in the missing number boxes to complete the sequences.

   a) 128, 64, ☐, 16, ☐. Did you halve or double? _____

   b) 160, 80, ☐, 20, ☐, 5. Did you halve or double? _____

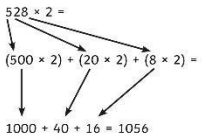
   c) 2, 4, ☐, 16, ☐, 64, 128. Did you halve or double? _____

   d) 3, 6, ☐, 24, ☐, 96. Did you halve or double? _____

Doubling and Halvi

I can use halving and doubling as a strategy for mental multiplic

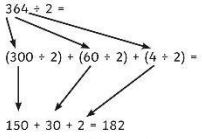
1. **Double it**
   - You will need a set of digit cards 0-9.
   - Turn over two cards to make a three-digit number.
   - Double it.
   - Write out the full number sentence e.g.



   - Repeat this activity ten times.

5

2. **Halve it**
   - You will need a set of digit cards 0-9.
   - Turn over two cards to make a three-digit number. The ones dig
     turning cards over until you get a 0, 2, 4, 6 or 8.
   - Double it.
   - Write out the full number sentence e.g.



   - Repeat this activity ten times.

3

Doubling and Halving

I can use halving and doubling as a strategy for mental multiplication and division.

1. **Double it**
   - You will need a set of digit cards 0-9.
   - Turn over one card.
   - Start a doubling sequence. Keep going until the numbers get beyond four digits.
     For example, if you turned over a **5**, the sequence would be:
     5, 10, 20, 40, 80, 160, 320, 640, 1280, 2560, 5120
   - Repeat this activity with five different start numbers.

2. **Halve it**

   Halve these numbers, continuing the sequence until you get down to a one-digit number.

   a) 1024

   b) 3072

   c) 1280

   d) 2304

   e) 7168

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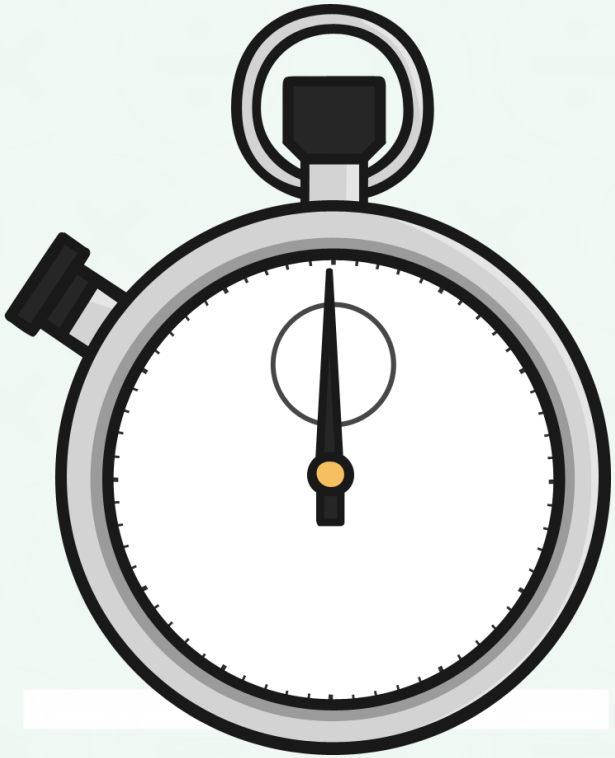
In a Minute

Set your timer to show one minute.

You have exactly one minute to tell your partner:

- Three things that you have learnt during the lesson.
- How this will help you with your learning.
- What you found difficult and think you could do better next time.

If you hesitate or repeat yourself, your partner can take over.



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