Lesson Printables

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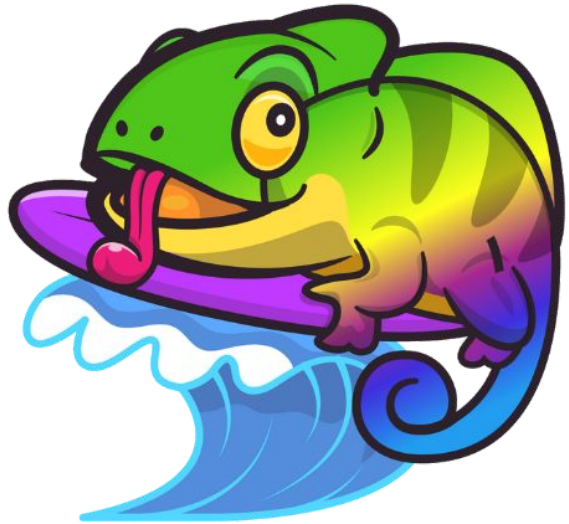


Planners: 2-3

Number Sentences
Sunlight: 4
Twilight: 5
Midnight: 6

Extras
Toolkit: 7
Answers: 8

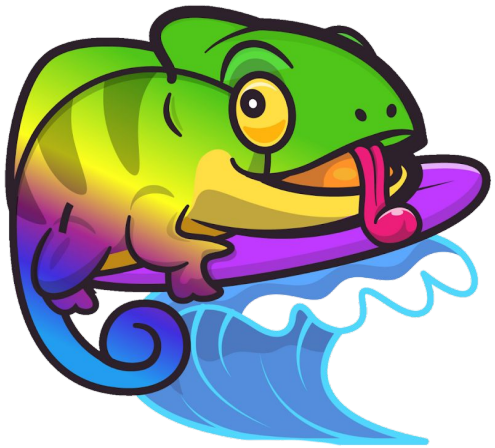
**Printing in the US? Scale to 'fit to printable area' in order to get the best print.*

LESSON 1: Multiplication/Division - Exploring creative ways to multiply multi-digit numbers

Starter	Main Activity and Input: Breaking up numbers in order to find more than 1 way to solve a problem.	Plenary
Shape Shifter: What could be the value of each shape? **To support:** 1. Where is the best place to start? What could be the value of the triangle, pentagon and rectangle? How could students use the values to help them solve the next number sentence? **To challenge:** 1. Can students complete the problem using only prime numbers?	*This lesson focuses on using number flexibility to multiply 2-digit numbers by 1-digit numbers. You could use this as a pre-assessment to see where your students are at in their understanding of how to multiply multi-digit numbers. Note, we do not explicitly model how to use area models/grid method as students are likely to have some background with multiplying 2-digit numbers by 1-digit numbers. If need be, it might be worth reviewing how to set up and use grid method/area models to multiply multi-digit numbers. We will model specific multiplication strategies for multiplying up to 4-digit numbers and decimals in future lessons.* **Input:** 1. Slide 6 shows a dog who has gone to a spa. If it costs $40 per hour at the spa and the dog spent 5 hours there, how many different ways can students work out the total cost of the spa day? Give students time to brainstorm possible strategies and then share ideas. Three possible strategies are modelled on slide 7. Can students explain them? - Option 1: Area model/grid method. - Option 2: Break 40 into 4 x 10 so that you solve 5 x 4 x 10. - Option 3: Multiply by 10 and then halve the answer because 5 is half of 10. 2. Slides 8 to 11 repeat this process with different animals and the number sentence 78 x 6. Give plenty of time for students to brainstorm and then share their ideas. Slides 9 to 12 model four different ways students could have solved the problem. - Slide 9: 6 x 70 and 6 x 8 - Slide 10: 6 x 80 and then subtract 2 groups of 6. - Slide 11: Break up 78 into 40, 30 and 8. (6 x 40) + (6 x 30) + (6 x 8). - Slide 12: Break 6 into 3 groups of 2 and then multiply by 78. 3. Slide 11 shows all the creative options. *Note, there are also other ways this could be solved - encourage students to find as many creative ways as possible.* **Activity: Creative multiplication - how many different ways can students solve a number sentence?** 1. Print and cut out number sentences for each learning zone. Put students into groups of 2 or 3. Encourage them to start by exploring just one number sentence. Can they find more than one way to solve it? Encourage students to explore many possible strategies. Students do not need to do this for all of the number sentences. 2. Students could put their findings into a poster that could be used as a display. **To support:** 1. Ask students how many different ways they can break up one of the numbers they are multiplying. E.g. 78 was broken into 40, 30 and 8. It also could have been 50, 20 and 8. **To challenge:** 1. Encourage students to draw a visual to match their thinking steps. 2. Can students find more than 3 possible ways to solve a problem?	**Let's share:** Look at each other's thinking steps and visuals. **Check for understanding:** 1. Can students explain another learner's thinking steps? Is there another way they could have solved the problem?

Things that might be useful for this lesson:

- Individual whiteboards:
  - ➔ Help students to record their thinking and share ideas with others.
- Counters or base ten blocks:
  - ➔ Help students to create and manipulate amounts.
- Coloured pencils/markers:
  - ➔ Help students to organise their thinking.



Peek at the Printables:

Sunlight Zone

Sunlight Number Sentences

3 x 54	68 x 4	5 x 43
6 x 38	47 x 9	8 x 26
3 x 54	68 x 4	5 x 43
6 x 38	47 x 9	8 x 26

Twilight Zone

Twilight Number Sentences

81 x 7	6 x 78	8 x 46
5 x 62	73 x 4	87 x 9
81 x 7	6 x 78	8 x 46
5 x 62	73 x 4	87 x 9

Midnight Zone

Midnight Number Sentences

81 x 7	6 x 78	8 x 197
195 x 4	224 x 5	48 x 36
81 x 7	6 x 78	8 x 197
195 x 4	224 x 5	48 x 36

Greener Alternatives:

- ➔ Write the number sentences on scrap paper or whiteboards for students to swap and share.
- ➔ You could also verbally assign students relevant number sentences to use or they could roll dice/flip over cards to create number sentences.

Sunlight Number Sentences

3 x 54 S	68 x 4 S	5 x 43 S
6 x 38 S	47 x 9 S	8 x 26 S

3 x 54 S	68 x 4 S	5 x 43 S
6 x 38 S	47 x 9 S	8 x 26 S

Twilight Number Sentences

81 x 7 T	6 x 78 T	8 x 46 T
5 x 62 T	73 x 4 T	87 x 9 T

81 x 7 T	6 x 78 T	8 x 46 T
5 x 62 T	73 x 4 T	87 x 9 T

Midnight Number Sentences

81 x 7 M	6 x 78 M	8 x 197 M
195 x 4 M	224 x 5 M	48 x 36 M

81 x 7 M	6 x 78 M	8 x 197 M
195 x 4 M	224 x 5 M	48 x 36 M

Times Table Toolkit

x2	Double the other number.
x3	Multiply the other number by 2 and add 1 more group.
x4	Double the other number and double your answer.
x5	Multiply the other number by 10 and halve your answer.
x6	Multiply the other number by 5 and then add 1 more group.
x7	Look at the other number and use its times table strategy.
x8	Multiply the other number by 4 and double your answer.
x9	Multiply the other number by 10 and subtract 1 group from your answer.
x10	Count in 10s or use a place value chart.

Times Table Toolkit

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x10	Count in 10s or use a place value chart.

Answers

Sunlight Answers	
3 x 54	162
68 x 4	272
5 x 43	215
6 x 38	228
47 x 9	423
8 x 26	208

Twilight Answers	
81 x 7	567
6 x 78	468
8 x 46	368
5 x 62	310
73 x 4	292
87 x 9	783

Midnight Answers	
81 x 7	567
6 x 78	468
8 x 197	1,576
195 x 4	780
224 x 5	1,120
42 x 36	1,512