

# Lesson Printables

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**Lesson Information Sheet: 2**

**Sunlight Zone**  
Activity: 3

**Twilight Zone**  
Activity: 4

**Midnight Zone**  
Activity: 5

**Extras**  
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# Let's multiply using different strategies

## Why learn this?

This lesson provides students with an opportunity to revisit and apply their knowledge of times tables while introducing area models to strengthen their conceptual understanding of multiplication as equal groups. It also allows you to gauge student's confidence and fluency, offering insights into their current level of understanding.

## How can I use area to solve multiplication problems? What strategies can I use to solve multiplication problems?

### Area Models

- The area of a rectangle can be calculated by multiplying the length measurement by the width measurement ( $A = l \times w$ ). Due to this formula, students can apply their times table knowledge when calculating the area of different rectangles. Note, during this lesson, we have not explicitly covered how students should record the area of a rectangle. For example, in square inches, square centimeters, etc. This will be covered more in depth during our measurement related lessons. For this lesson, we have simply focused on getting students to see the connection between multiplication and the area of rectangles.

- Let's look at  $3 \times 4$  using grid paper.

- This could be interpreted as a rectangle with 3 rows and 4 columns or 4 rows and 3 columns.
- Students should draw a rectangle that meets these parameters.
  - ◆ How many boxes have they colored in total?
    - This is the area of the rectangle and the product of the times table number sentence.

### Times Table Top Tips/Connections

Note, these are just suggestions. Students do not need to apply these strategies. However, it might be worth discussing them with your student and using them as possible 'checking' strategies in order for students to continue to make connections between different times tables.

- 3 times table: 3 groups can be broken into 2 groups + 1 group.
  - Multiply the other number by 2 and then add an extra group in order to have 3 groups in total.
- 4 times table: 4 is double 2.
  - Double the other number in order to get 2 groups and then double the answer to have 4 groups in total.
- 5 times table: 5 is half of 10.
  - Multiply the other number by 10 and then halve the answer.
- 6 times table: 6 can be broken into 5 groups + 1 group.
  - Multiply the other number by 5 and then add an extra group in order to have 6 groups in total.
- 7 times table: Use the 'other' number's times table connection to solve 7 times table problems.
- 8 times table: 8 is double 4.
  - Multiply the other number by 4 and then double your answer in order to have 8 groups in total.
- 9 times table: 9 groups can be made by calculating 10 groups and then taking away 1 group to have 9 groups in total.
  - Multiply the other number by 10 and then take away the extra group.

## Let's warm up!

### Starter Activity - Sticky Situation

Fido the dog had a giant stick that wouldn't fit through the gap in a fence. In order to fix this, he had to cut the stick into a fraction of its original size. Can students use the clues in order to work out how long the original stick was?

#### To support, students could:

- Be guided towards draw a tape diagram/bar model to match the clues.
  - Draw a bar/rectangle to represent the whole stick and then divide the stick into quarters. What does quarters mean?
  - Model dividing the quarters in half. According to the clues, what amount did this fraction measure?
  - If you know this measurement, can you work backwards to calculate the length of the original stick?

#### To challenge, students could:

- Work out what the stick would measure if the fraction that fit through the fence measured  $\frac{1}{2}$  a meter, not 2 meters.

## Let's do this!

**Main Activity** - Play Space Race. The aim of this game is earn as many space boxes as possible by filling in a grid with rectangles. Students roll dice to get three numbers (two in Sunlight Zone) that make a multiplication number sentence. What would the number sentence look like as a rectangle? Students should draw the rectangle on the grid and record how many space boxes they have earned. Students continue until they can't use their number sentence three times in a row. This means the game is finished. In order to get their score, students should calculate how many space boxes they earned in total. This amount is their score.

#### To support, students could:

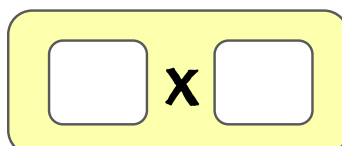
- Use the times table toolkit for strategies and tips for solving problems that connect to each times table. See printables.

#### To challenge, students could:

- Prove that their answers are correct by using a different strategy.
- Play the more tactical versions of the game. See Twilight and Midnight Zones for more details.

# Sunlight Zone

1. For this game you will need a dice.
2. Roll the dice twice.
3. Multiply your numbers together.  
→ If you roll a 3 and 4, your number sentence is  $3 \times 4$ .
4. Color in a rectangle on the space board that matches your number sentence.
5. Record how many space blocks you've claimed.
6. Keep rolling until you can't color in any free space blocks.  
→ If you can't go 3 times in a row, the game is over.
7. Add up all of your space blocks.  
→ This is your score.



# Twilight Zone

1. For this game you will need a dice.
2. Roll the dice three times.
3. You now have two options.
  - Multiply any of the two numbers together.
  - Add two of the numbers together and then multiply the total by the remaining dice.
4. Color in a rectangle on the space board that matches your number sentence.
5. Record how many space blocks you've claimed.
6. Keep rolling until you can't color in any free space blocks.
  - If you can't go 3 times in a row, the game is over.
7. Add up all of your space blocks.
  - This is your score.



$$\square \times \square$$

$$(\square + \square) \times \square$$

# Midnight Zone

1. For this game you will need a dice.
2. Roll the dice three times.
3. You now have three options.
  - Multiply any of the two numbers together.
  - Add two of the numbers together and then multiply the total by the remaining dice.
  - Subtract one dice from another and multiply your answer by the remaining dice.
4. Use the drawing tool to color in a rectangle on the space board that matches your number sentence.
5. Record how many space blocks you've claimed.
6. Keep rolling until you can't color in any free space blocks.
  - If you can't go 3 times in a row, the game is over.
7. Add up all of your space blocks.
  - This is your score.



$$\square \times \square$$

$$(\square + \square) \times \square$$

$$(\square - \square) \times \square$$

# Recording Log

Number Sentence	Space Boxes



## 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	Count in 5s on your fingers, or multiply the other number by 10 and halve your answer.
x6	Multiply the other number by 3 and double your answer, or 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.