

Lesson Printables

Be a rockstar and only print what you need!



Planners: 2-3

Rules

Sunlight: 4
Twilight: 5
Midnight: 6

Extras

Recording Logs: 7
Place Value Mats: 8

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

LESSON 1: Place Value - Exploring place value

Starter	Main Activity and Input: Identifying the value of each digit in a number.	Plenary
<p>Crazy Connections: How many different maths connections or questions can students connect to the photograph?</p> <p>To support: 1. Ask students what they could count in the picture. What other maths ideas could they connect to the game being played?</p> <p>To challenge: 1. How many different maths concepts can students connect to this picture? E.g. fractions, data, measurement, shape, etc.</p>	<p>Input:</p> <ol style="list-style-type: none">Slide 6 asks students what they already know about the term place value or what they know about our number system. Give students time to discuss and share ideas on the board. This could be used as a pre-assessment to see what students already know.Slide 7 asks students what place value columns they can already name. Have students share their thinking on the board. Slide 8 shows the names of 7 place value columns and asks students to write out the value of each place value column. E.g. 1, 10, 100, etc. We have done this vertically so that students can see how the numbers increase with each place value column. Slide 9 explains that each place value column is 10 times bigger than the previous column. You could use place value blocks to model that 1 tens block is made out of 10 ones blocks and 1 hundreds block is made out of 10 tens blocks etc.Slide 10 shows an 8-digit number. What is the value of each digit in the number? Ask students to share their thinking on the board. Slide 11 reveals the number in expanded form. Note, some curriculums use the term 'partition' to describe finding the value of each digit. We will use 'expanded form'.Slides 12 to 20 model the main activity: playing the Expandables game.<ul style="list-style-type: none">- Make your number using playing cards/dice. (The size of the number will vary depending on the learning zones.)- Flip over 1 new card (dice for Sunlight). This is your action card and indicates which place value column to focus on to find out how many points you've scored. E.g. 5 = ten thousands value. This means you earn the value of the digit in the ten thousands column. Write the digit in expanded form to work out how many points you score.- After each turn, add up your points to your previous score. The player with the most points when time is called is the winner. <p>Activity: Play Expandables.</p> <ol style="list-style-type: none">Print the rules for each learning zone. Students will also need playing cards and 6-sided dice (Sunlight Zone). Students could play the game in pairs or small groups. A game could last for a certain number of rounds or you could just call time to end the game. <p>To support:</p> <ol style="list-style-type: none">Sunlight Zone uses 6-digit numbers. Students should use dice when playing this version of the game.Print place value mats and recording logs to help students organise their numbers and their thinking.Students could use a calculator to add up their points. <p>To challenge:</p> <ol style="list-style-type: none">Make a tactical version of the game. Students can move their cards around in order to make what they think is the best number possible. Once they have their cards locked in, they then flip over their action in order to determine which place value column reveals their points.	<p>Possible Points: How many points has the parrot scored?</p> <p>Check for understanding:</p> <ol style="list-style-type: none">Can students identify that the parrot scored 708,100 points in total?

Things that might be useful for this lesson:

- Individual whiteboards:
 - Help students to record their thinking and share ideas with others.
- Place value blocks:
 - Help students to see the value of each digit in a number.
 - E.g. To build 25, you need 2 tens (20) and 5 ones (5).
- Dice/playing cards:
 - Add kinesthetic movement.
 - Can be used to make numbers in the game.



Peek at the Printables:

Sunlight Zone		Twilight Zone		Midnight Zone	
<p><u>Sunlight Expandables</u></p> <ol style="list-style-type: none"> Roll a dice 6 times or pick up 6 playing cards to make your 6-digit number. <ul style="list-style-type: none"> → Take out the Jacks, Queens and Kings if you are using playing cards. → Aces = 1 and 10s = 0. Roll a dice. It will tell you which place value spot will earn you points. <ul style="list-style-type: none"> → 1 = Ones → 2 = Tens → 3 = Hundreds → 4 = Thousands → 5 = Ten Thousands → 6 = Hundred Thousands You score the value of the digit in the place value spot that you've rolled. Add up your score after each round. The player with the most points when time is called is the winner. 	<p><u>Sunlight Expandables</u></p> <ol style="list-style-type: none"> Roll a dice 6 times or pick up 6 playing cards to make your 6-digit number. <ul style="list-style-type: none"> → Take out the Jacks, Queens and Kings if you are using playing cards. → Aces = 1 and 10s = 0. Roll a dice. It will tell you which place value spot will earn you points. <ul style="list-style-type: none"> → 1 = Ones → 2 = Tens → 3 = Hundreds → 4 = Thousands → 5 = Ten Thousands → 6 = Hundred Thousands You score the value of the digit in the place value spot that you've rolled. Add up your score after each round. The player with the most points when time is called is the winner. 	<p><u>Twilight Expandables</u></p> <ol style="list-style-type: none"> Pick up 7 playing cards to make your 7-digit number. <ul style="list-style-type: none"> → Take out the Jacks, Queens and Kings. → Aces = 1 and 10s = 0. Pick up a new card. It will tell you which place value spot will earn you points. <ul style="list-style-type: none"> → Ace = Ones → 2 = Tens → 3 = Hundreds → 4 = Thousands → 5 = Ten Thousands → 6 = Hundred Thousands → 7 = Millions → 8 = Lose your turn → 9 = Ones → 10 = Millions You score the value of the digit in the place value spot that matches your card. Add up your score after each round. The player with the most points when time is called is the winner. 	<p><u>Twilight Expandables</u></p> <ol style="list-style-type: none"> Pick up 7 playing cards to make your 7-digit number. <ul style="list-style-type: none"> → Take out the Jacks, Queens and Kings. → Aces = 1 and 10s = 0. Pick up a new card. It will tell you which place value spot will earn you points. <ul style="list-style-type: none"> → Ace = Ones → 2 = Tens → 3 = Hundreds → 4 = Thousands → 5 = Ten Thousands → 6 = Hundred Thousands → 7 = Millions → 8 = Lose your turn → 9 = Ones → 10 = Millions You score the value of the digit in the place value spot that matches your card. Add up your score after each round. The player with the most points when time is called is the winner. 	<p><u>Midnight Expandables</u></p> <ol style="list-style-type: none"> Pick up 8 playing cards to make an 8-digit number. <ul style="list-style-type: none"> → Take out the Jacks, Queens and Kings if you are using playing cards. → Aces = 1 and 10s = 0. Pick up a new card. It will tell you which place value spot will earn you points. <ul style="list-style-type: none"> → Ace = Ones → 2 = Tens → 3 = Hundreds → 4 = Thousands → 5 = Ten Thousands → 6 = Hundred Thousands → 7 = Millions → 8 = Lose your turn → 9 = Millions → 10 = Millions You score the value of the digit in the place value spot that matches your card. Add up your score after each round. The player with the most points when time is called is the winner. 	<p><u>Midnight Expandables</u></p> <ol style="list-style-type: none"> Pick up 8 playing cards to make an 8-digit number. <ul style="list-style-type: none"> → Take out the Jacks, Queens and Kings if you are using playing cards. → Aces = 1 and 10s = 0. Pick up a new card. It will tell you which place value spot will earn you points. <ul style="list-style-type: none"> → Ace = Ones → 2 = Tens → 3 = Hundreds → 4 = Thousands → 5 = Ten Thousands → 6 = Hundred Thousands → 7 = Millions → 8 = Ones → 9 = Lose your turn → 10 = Millions You score the value of the digit in the place value spot that matches your card. Add up your score after each round. The player with the most points when time is called is the winner.



Greener Alternatives:

- Print just a few copies of the rules and post them up somewhere in your classroom. Students could refer to them if and when they need to.
- Students could keep track of their points on whiteboards rather than the recording logs found in the printables.
- Instead of playing the game, students could simply make numbers using cards and then expand them.

Sunlight Expandables

1. Roll a dice 6 times or pick up 6 playing cards to make your 6-digit number.
 - Take out the Jacks, Queens and Kings if you are using playing cards.
 - Aces = 1 and 10s = 0.
2. Roll a dice. It will tell you which place value spot will earn you points.
 - 1 = Ones value
 - 2 = Tens value
 - 3 = Hundreds value
 - 4 = Thousands value
 - 5 = Ten Thousands value
 - 6 = Hundred Thousands value
3. Add up your score after each round
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Twilight Expandables

1. Pick up 7 playing cards to make your 7-digit number.
 - Take out the Jacks, Queens and Kings.
 - Aces = 1 and 10s = 0.
2. Pick up a new card. It will tell you which place value spot will earn you points.
 - Ace = Ones value
 - 2 = Tens value
 - 3 = Hundreds value
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Midnight Expandables

1. Pick up 8 playing cards to make an 8-digit number.
 - Take out the Jacks, Queens and Kings if you are using playing cards.
 - Aces = 1 and 10s = 0.
2. Pick up a new card. It will tell you which place value spot will earn you points.
 - Ace = Ones value
 - 2 = Tens value
 - 3 = Hundreds value
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 - 5 = Ten Thousands value
 - 6 = Hundred Thousands value
 - 7 = Millions value
 - 8 = Ten Thousands value
 - 9 = Lose your turn
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3. Add up your score after each round.
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3. Add up your score after each round.
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Recording Logs

Number	Points Scored	Current Points Total

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Place Value Mats

T M	M	H Th	T Th	Th	H	T	O

T M	M	H Th	T Th	Th	H	T	O

T M	M	H Th	T Th	Th	H	T	O