

Lesson Printables

Be a rockstar and only print what you need!



Planners: 2-3

Challenge Cards

Sunlight: 4

Twilight: 5

Midnight: 6

Extras

Recording Log: 7

Sentence Stems: 8

Tape Diagrams: 9

Answers

Sunlight: 10

Twilight: 11

Midnight: 12

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

LESSON 1: Division - Making equal groups

Starter	Main Activity and Input: Explore what numbers can be shared between equal groups.	Plenary
<p>Concert Conundrum: A triangular room holds 10 rows of chairs. Row 1 has 1 chair and Row 2 has 3 chairs. The pattern continues. How many chairs will there be on the 10th row?</p> <p>To support: 1. What is the chair pattern? How do students know how many chairs will go on the next row? What number sentence represents the pattern for each new row?</p> <p>To challenge: 1. How many chairs will there be in total in the concert hall?</p>	<p><i>This lesson is set up as an exploration into dividing numbers into equal groups. It could be used as a provocation or pre-assessment to see where your students are at in their understanding of division. It will be helpful for students to have their own counters, blocks or manipulatives, so they can physically divide them into equal groups. Please note, in this lesson we have not explicitly covered any division vocabulary like dividend, divisor, quotient or remainder. These will be discussed at length in future lessons. If appropriate, you might wish to discuss these terms with your class during the lesson.</i></p> <p>Input:</p> <ol style="list-style-type: none">Slide 6 shows the division symbol. What does it mean? What words could connect to it? How does it work when used in a number sentence? Get students to share their ideas as a class. These might include discussing words like divide, split, share, give, equal groups, etc.Slide 7 shows 12 cupcakes. Ask students how they could share the cupcakes equally. Provide students with counters or block, so they can physically explore all the different ways they can divide 12 into equal groups. What does equal mean? Elicit from students that each group must have the same amount of cupcakes in order for the groups to be equal.Slide 8 shows that 12 cupcakes could be shared between 12 groups. Slide 9 provides a division number sentence and tape diagram to match the thinking steps. They show that 12 can be divided into 12 groups with 1 cupcake in each group. You could get students to physically do this with their counters in order to concretely show dividing 12 into 12 groups. Students would gather 12 counters and then draw 12 circles to represent the 12 groups. Next, they would place a counter in each group until they run out of counters. Ask students if each group has the same amount of counters. Yes, so 12 can be divided evenly by 12.This process continues to repeat for slides 10 to 14. We have continued to use the same terminology. E.g. '12 cupcakes shared between x groups. The amount of cupcakes in 1 group is your answer.' We have also included words like 'divided' and 'split equally'.Slide 14 shows all of the ways to divide 12 evenly. What word could connect all of the number sentence answers? Elicit from students that they have found all of the factors of 12 because a factor is a number that can divide another number evenly.The process is repeated on slides 15 and 16 to show sharing the number 11. Elicit from students that 11 can only be shared equally between 11 groups and 1 group. You could ask your students why 11 can't be divided by 2. Model drawing 11 dots between 2 groups. One group will have more dots than the other. If the groups aren't equal, the number is not divisible. <p>Activity: Exploring making equal groups.</p> <ol style="list-style-type: none">Print and cut out the picture cards and number cards. Provide students with counters or blocks and let them explore how many different ways each number can be shared equally. Students could stick the cards in their books or take one, solve it and then return it to a pile for others to use. <i>Note, students do not need to complete all of the challenge cards. This activity could be completed individually, in pairs or small groups.</i> <p>To support:</p> <ol style="list-style-type: none">Sunlight Zone explores dividing numbers up to 20.Provide students with the optional organiser in order to help them show their thinking. Sentence stems can also be used to help students describe how they have made equal groups. See printables. <p>To challenge:</p> <ol style="list-style-type: none">Find all of the possible equal groups.Students could explore trying to draw their own tape diagrams. Note, hand-drawn tape diagrams can be tricky for students to make. <p>Their tape diagrams do not need to have perfectly equal size boxes (in an ideal world they would be equal). The main goal is that students understand which numbers in their tape diagram connect to the numbers in their number sentence.</p>	<p>Get Grouping: How many different ways can the students make equal groups using the people/objects in class? This could have many permutations. E.g. How could you group the boys/girls? How would you group the number of students that have pets? Etc.</p> <p>Check for understanding: 1. Can students identify any equal groups found in the class?</p>

Things that might be useful for this lesson:

- Individual whiteboards:
 - Help students to record their thinking and share ideas with others.
- Counters/blocks:
 - Help students to physically divide items into equal groups.



Peek at the Printables:

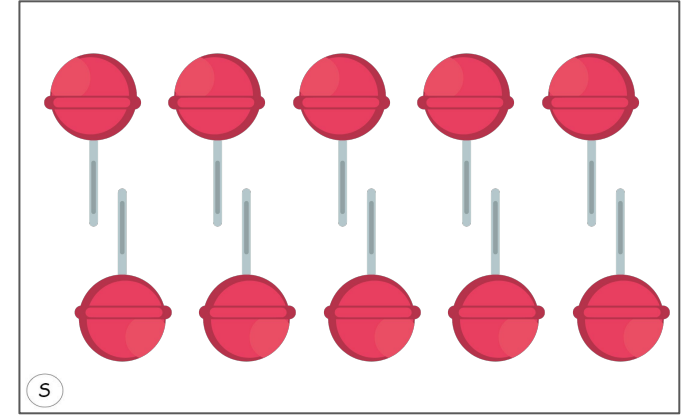
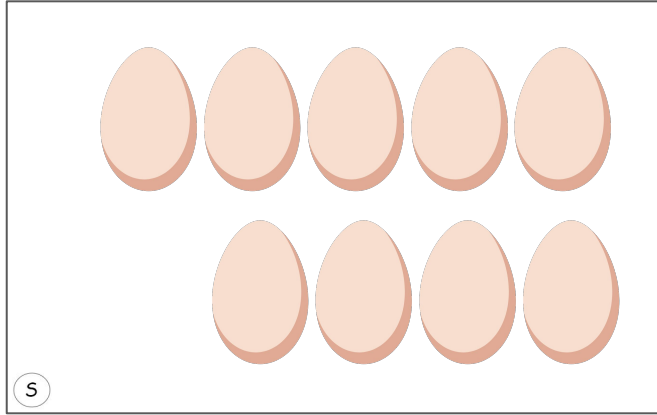
Sunlight Zone			Twilight Zone			Midnight Zone		
								24
14	15	16	20	24	36	32	36	54
18	19	20	42	45	50	72	81	94



Greener Alternatives:

- Create your own collections of items in stations around the class. E.g. Put a rubber band around 10 pencils and then ask students to explore how many different ways they can evenly share 10 pencils. You could also include just numbers as per the printables. Students could move from station to station to create their number sentences.

Sunlight Zone



14

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15

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16

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18

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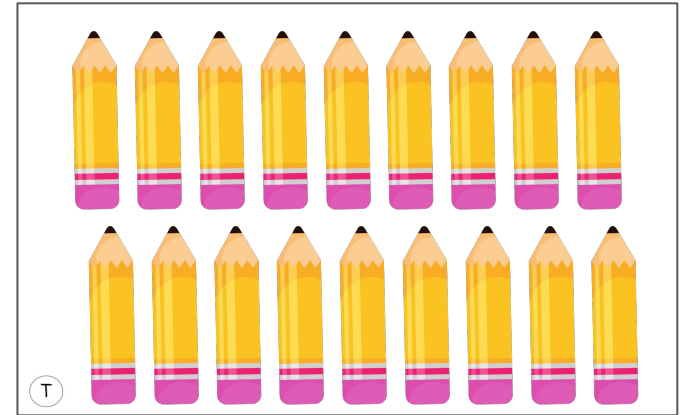
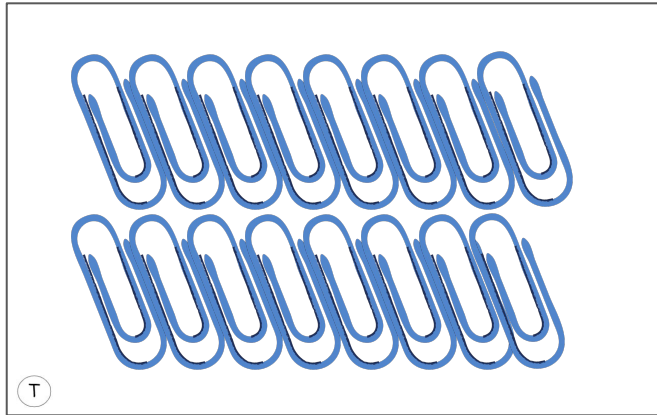
19

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20

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Twilight Zone



20

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24

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36

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42

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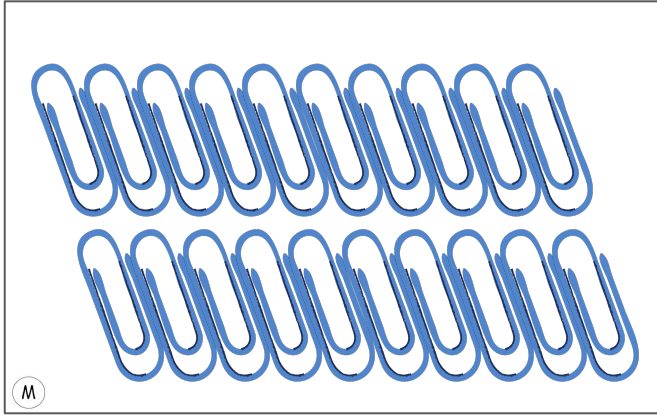
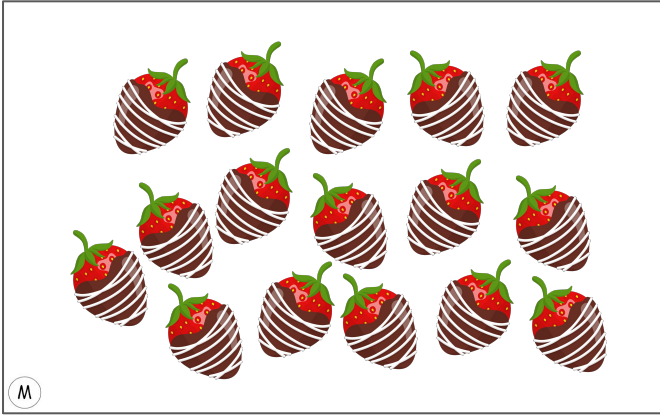
45

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Midnight Zone



24

M

32

M

36

M

54

M

72

M

81

M

94

M

Optional Organiser

Picture

Number Sentence

I shared _____ between _____ groups.

There are _____ in each group.

Picture

Number Sentence

I shared _____ between _____ groups.

There are _____ in each group.

Sentence Stems

I shared _____ between _____ groups.

There are _____ in each group.

I shared _____ between _____ groups.

There are _____ in each group.

I shared _____ between _____ groups.

There are _____ in each group.

I shared _____ between _____ groups.

There are _____ in each group.

I shared _____ between _____ groups.

There are _____ in each group.

I shared _____ between _____ groups.

There are _____ in each group.

Tape Diagram Templates

Sunlight Answers

Below shows all of the possible solutions. Students do not need to find all solutions.

Strawberries	$8 \div 8 = 1$ $8 \div 1 = 8$ $8 \div 2 = 4$ $8 \div 4 = 2$
Eggs	$9 \div 1 = 9$ $9 \div 9 = 1$
Lollipops	$10 \div 10 = 1$ $10 \div 1 = 10$ $10 \div 2 = 5$ $10 \div 5 = 2$
14	$14 \div 1 = 14$ $14 \div 14 = 1$ $14 \div 2 = 7$ $14 \div 7 = 2$
15	$15 \div 1 = 15$ $15 \div 15 = 1$ $15 \div 3 = 5$ $15 \div 5 = 3$

16	$16 \div 16 = 1$ $16 \div 1 = 16$ $16 \div 2 = 8$ $16 \div 8 = 2$ $16 \div 4 = 4$
18	$18 \div 1 = 18$ $18 \div 18 = 1$ $18 \div 2 = 9$ $18 \div 9 = 2$ $18 \div 3 = 6$ $18 \div 6 = 3$
19	$19 \div 1 = 19$ $19 \div 19 = 1$
20	$20 \div 1 = 20$ $20 \div 20 = 1$ $20 \div 2 = 10$ $20 \div 10 = 2$ $20 \div 4 = 5$ $20 \div 5 = 4$

Twilight Answers

Below shows all of the possible solutions. Students do not need to find all solutions.

Strawberries	$15 \div 1 = 15$ $15 \div 15 = 1$ $15 \div 3 = 5$ $15 \div 5 = 3$	20	$20 \div 1 = 20$ $20 \div 20 = 1$ $20 \div 2 = 10$ $20 \div 10 = 2$ $20 \div 4 = 5$ $20 \div 5 = 4$	42	$42 \div 1 = 42$ $42 \div 42 = 1$ $42 \div 2 = 21$ $42 \div 21 = 2$ $42 \div 3 = 14$ $42 \div 14 = 3$ $42 \div 6 = 7$ $42 \div 7 = 6$
Paperclips	$16 \div 16 = 1$ $16 \div 1 = 16$ $16 \div 2 = 8$ $16 \div 8 = 2$ $16 \div 4 = 4$	24	$24 \div 1 = 24$ $24 \div 24 = 1$ $24 \div 2 = 12$ $24 \div 12 = 2$ $24 \div 3 = 8$ $24 \div 8 = 3$ $24 \div 4 = 6$ $24 \div 6 = 4$	45	$45 \div 1 = 45$ $45 \div 45 = 1$ $45 \div 15 = 3$ $45 \div 3 = 15$ $45 \div 5 = 9$ $45 \div 9 = 5$
Pencils	$18 \div 1 = 18$ $18 \div 18 = 1$ $18 \div 2 = 9$ $18 \div 9 = 2$ $18 \div 3 = 6$ $18 \div 6 = 3$	36	$36 \div 1 = 36$ $36 \div 36 = 1$ $36 \div 2 = 18$ $36 \div 18 = 2$ $36 \div 4 = 9$ $36 \div 9 = 4$ $36 \div 3 = 12$ $36 \div 12 = 3$ $36 \div 6 = 6$	50	$50 \div 1 = 50$ $50 \div 50 = 1$ $50 \div 2 = 25$ $50 \div 25 = 2$ $50 \div 5 = 10$ $50 \div 10 = 5$

Midnight Answers

Below shows all of the possible solutions. Students do not need to find all solutions.

Strawberries	$16 \div 16 = 1$ $16 \div 1 = 16$ $16 \div 2 = 8$ $16 \div 8 = 2$ $16 \div 4 = 4$	32	$32 \div 1 = 32$ $32 \div 32 = 1$ $32 \div 2 = 16$ $32 \div 16 = 2$ $32 \div 8 = 4$ $32 \div 4 = 8$	72	$72 \div 1 = 72$ $72 \div 72 = 1$ $72 \div 2 = 36$ $72 \div 36 = 2$ $72 \div 3 = 24$ $72 \div 24 = 3$ $72 \div 4 = 18$ $72 \div 18 = 4$ $72 \div 6 = 12$ $72 \div 12 = 6$ $72 \div 8 = 9$ $72 \div 9 = 8$
Paperclips	$20 \div 1 = 20$ $20 \div 20 = 1$ $20 \div 2 = 10$ $20 \div 10 = 2$ $20 \div 4 = 5$ $20 \div 5 = 4$	36	$36 \div 1 = 36$ $36 \div 36 = 1$ $36 \div 2 = 18$ $36 \div 18 = 2$ $36 \div 4 = 9$ $36 \div 9 = 4$ $36 \div 3 = 12$ $36 \div 12 = 3$ $36 \div 6 = 6$	81	$81 \div 1 = 81$ $81 \div 81 = 1$ $81 \div 3 = 27$ $81 \div 27 = 3$ $81 \div 9 = 9$
24	$24 \div 1 = 24$ $24 \div 24 = 1$ $24 \div 2 = 12$ $24 \div 12 = 2$ $24 \div 3 = 8$ $24 \div 8 = 3$ $24 \div 4 = 6$ $24 \div 6 = 4$	54	$54 \div 1 = 54$ $54 \div 54 = 1$ $54 \div 2 = 27$ $54 \div 27 = 2$ $54 \div 3 = 18$ $54 \div 18 = 3$ $54 \div 6 = 9$ $54 \div 9 = 6$	94	$94 \div 1 = 94$ $94 \div 94 = 1$ $94 \div 2 = 47$ $94 \div 47 = 2$