

A Hop and Skip with STEM

Standards

Math

2.NBT.A.2 Count within 1000. Skip-count within 1000 by 5s, 10s, and 100s, starting from any number in its skip counting sequence.

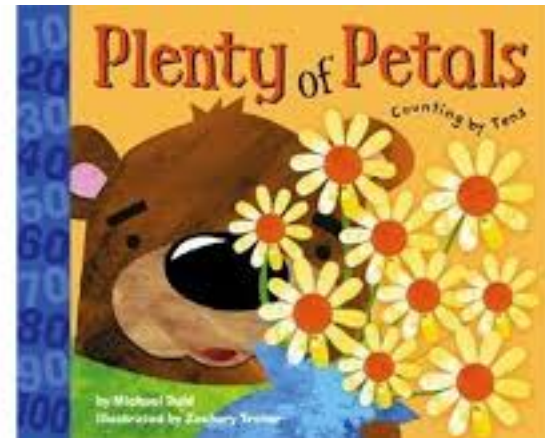
Science

2.LS1.3 Use simple graphical representations to show that species have unique and diverse life cycles.

Engage – A Beary Exciting Way to Count!

Description of Engage Activity

- The teacher will have a shared reading of the book “Plenty of Petals- Skip Counting by 10’s” by Michael Dahl.



Interactive Notebook Unit Prepared by TJ Chase

Engage – Discussion

Is counting by 1's the only way to count?

How many different ways can you think of to count by?

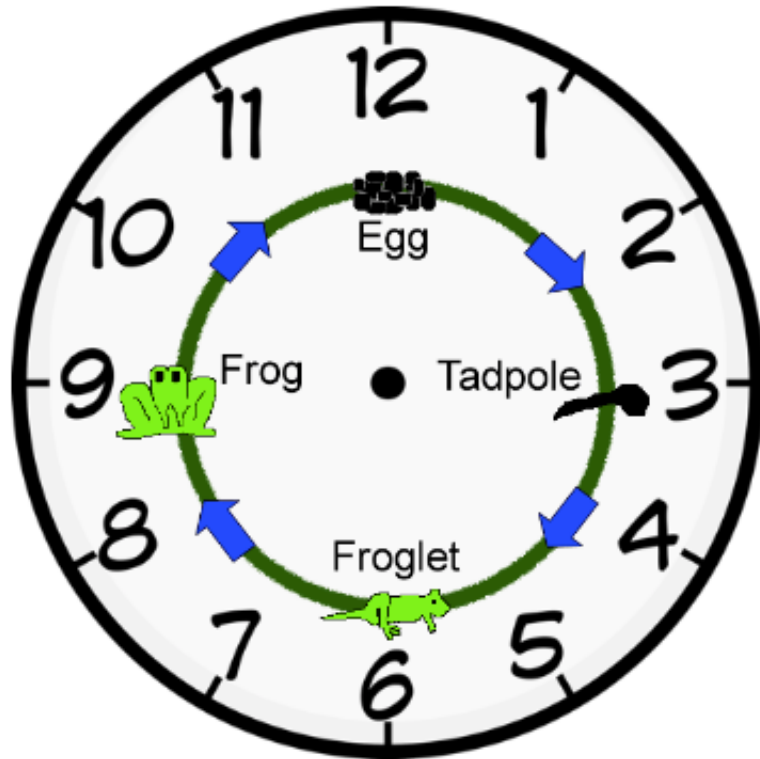
What did the characters in the book count by?

Explore – Clocking and Hopping

Directions:

1. Divide students into small groups of about 4-5 students.
2. Tell students that we are going to be working with large clocks and a hippity hoppity guest
3. Using the large clock, model for the students how to properly skip count by 5's.
4. Starting at 12, hit each number with the minute hand and skip count by 5s. (e.g. 1=5, 2=10 and so on) Explain to students that each new number on the clock represents 5 minutes past the hour.
5. Have the students count aloud with you!
6. Once the students feel comfortable with skip counting by 5's, have them count every other number so they can practice counting by 10's. (e.g. Starting at the 2 on the clock and saying 10, and then going to the 4 and saying 20.)
7. Since the clock can be split into 4 quarters, this will be a great time to bring in the life cycle of a frog.
8. The frog goes through 4 main stages of life: the egg, the tadpole, the froglet, and the frog.
9. Starting at 12 with the egg, have the students skip count around the clock until they hit all the quarters on the clock. (12,3,6,9)
10. At each quarter students will place a cut out of the frog's life cycle. Like in the example. (12-egg, 3- tadpole, 6-froglet, 9- Frog)
11. This frog and clock representation will later help the students in the Elaborate portion of this project.

Explore - Clocking and Hopping



Explore - Clocking and Hopping

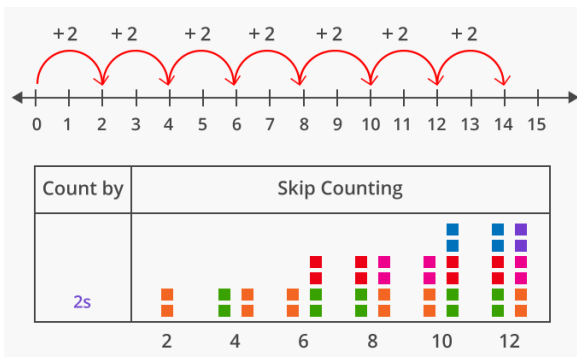
Materials: (Each group of students will need the following)

- 1 Large Manipulative Clock
- 1 Frog Life Cycle cut outs

These materials will add depth to the activity and student's knowledge because it will provide a hands-on approach to skip counting, and skills revolving around the clock. The frog's life cycle will extend student's learning by giving them some background knowledge for the Elaborate and Explain portions of this project.

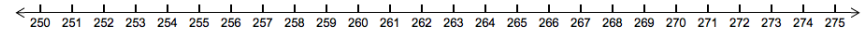
Explain (Math) – Student Version

- _____ - _____ is counting by any number that is not the number one (1).
- We will be counting by __, __, and ____.
- A _____ is a straight line with equal spacing between numbers, it is used to show us the amount of numbers we are skip counting.
- It is a _____ we can use to help us when _____ - _____.
- Below is an example from SplashLearn on skip counting by 2's and what it looks with manipulatives.

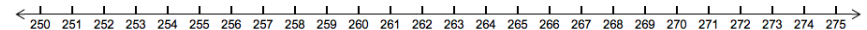


Explain (Math) – Student Version

Using the number line below, demonstrate how you would skip count by 5's starting at 250 and ending at 265.



Using the number line below, demonstrate skip counting by 10's starting at 250 and ending at 270.



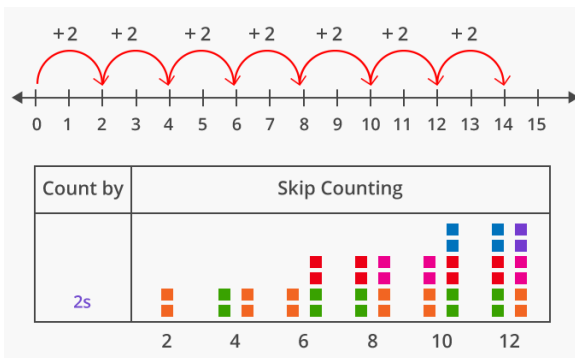
Sources:

Include citation(s) for source(s) here, if any

Sources: <https://www.splashlearn.com/math-vocabulary/number-sense/skip-count>

Explain (Math) – Teacher Version

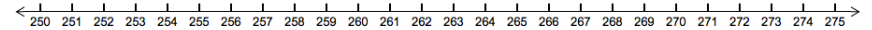
- Skip-counting is counting by any number that is not the number one (1).
- We will be counting by 5s, 10s, and 100s.
- A number line is straight line with equal spacing between numbers, it is used to show us the amount of numbers we are skip counting.
- It is a tool we can use to help us when skip-counting.
- Below is an example from SplashLearn on skip counting by 2's and what it looks with manipulatives.



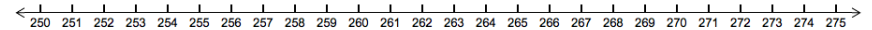
Sources: <https://www.splashlearn.com/math-vocabulary/number-sense/skip-count>

Explain (Math) – Teacher Version

Using the number line below, demonstrate how you would skip count by 5's starting at 250 and ending at 265.

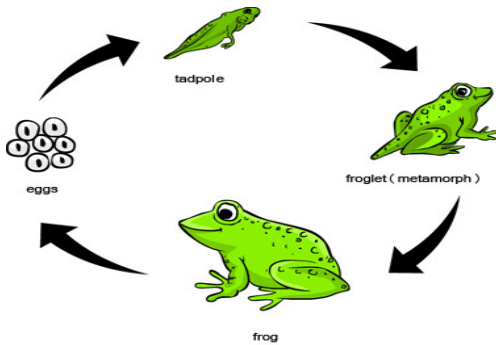


Using the number line below, demonstrate skip counting by 10's starting at 250 and ending at 270.



Explain (Science) – Student Version

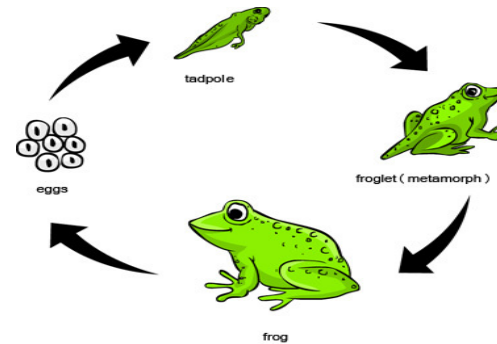
- A _____ is the stages an _____ goes through in life.
- We will focus on a _____ life cycle to remember the different _____ of life the frog goes through



-
- What changes did you see the frog going through?

Explain (Science) – Teacher Version

- A Life Cycle is the stages an organism goes through in life.
- We will focus on a frog's life cycle to remember the different stages of life the frog goes through



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- What changes did you see the frog going through?

The frog started as an egg. As time elapsed, the frog began to change (metamorphosis) into a tadpole. The tadpole then became a froglet, and then an adult frog.

Sources:

Frog Life Cycle. (n.d.). Retrieved from <https://mskkendrick.weebly.com/frog-life-cycle.html>

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Elaborate – My Animal’s Life Cycle

1. Students will be given a graphic organizer with a blank 4-part life cycle on it.
2. Next give students a capsule with a secret sponge animal inside it.
3. Students will then predict the number of minutes it takes for their animals to go through its entire life cycle.
4. Have students draw the capsule as the egg of their animal’s life cycle.
5. Once students have drawn their egg, have them place their capsules in warm water and start the timer.
6. While the capsule is dissolving, have students skip count by 5s each minute they have predicted. (e.g. 4 minutes= 240 seconds)
7. After every minute have the students record what they see with their capsule using the app SeeSaw with iPads.
8. Once the capsules have dissolved, the students will pick 3 more of their findings to fill into their graphic organizers.
9. The students will record their findings, and their estimated times on the graphic organizer, and then record the actual amount of time it took for their capsules to dissolve.
10. This is a good time to explain that not all life cycles take the same amount of time in real life, much like the capsules.
11. Remind students to reference their large clocks and frog life cycles from the previous activity if reinforcement is needed.



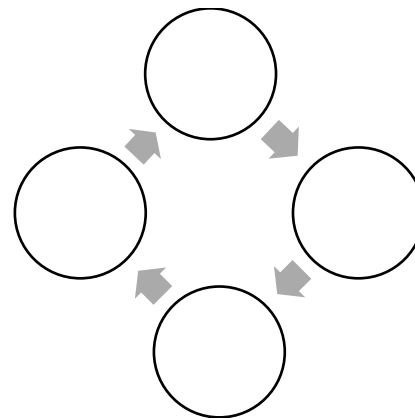
Elaborate -My Animal’s Life Cycle

Recording Sheet

Name: _____

1. My Animal is _____
2. Predict: The time it takes my capsule to dissolve. (In Minutes)
_____ minutes
3. Actual time it took my capsule to dissolve.
_____ minutes
4. The time it took my partners capsule to dissolve. (In Minutes.)
_____ minutes

My Animal’s Life Cycle



CER- My Animal's Life Cycle

Claim: Write a claim comparing animal's life cycles using both your animals' life cycle, and you partners. Are they the same or different?

- I claim that all Animal's life cycles are _____

(Same, Different)

Evidence: Use data from your lab activity to help support your claim.

- My animal was a _____ and it took ____ minutes to dissolve.
- My partner's animal was _____ and it took ____ minutes to dissolve.

Reasoning :Write a sentence that explains how your evidence supports your claim.

- Since my capsule and my partner's capsule took _____ (same or different) amounts of time to dissolve, I can state that all animals _____ (life cycles or skip counting) are different.

Answer Key CER

Claim: Write a claim comparing animal's life cycles using both your animals' life cycle, and you partners. Are they the same or different?

- I claim that all animal's life cycles are Different.

Evidence: Use data from your lab activity to help support your claim.

- My animal was a _____ and it took ____ minutes to dissolve.
- My partner's animal was _____ and it took ____ minutes to dissolve.

(Student's answers will vary based on their animals and dissolve times)

Reasoning: Write a sentence that explains how your evidence supports your claim.

- Since my capsule and my partner's capsule took different amounts of time to dissolve, I can state that all animal's life cycles are different.

Elaborate - My Animal's Life Cycle.

Materials:

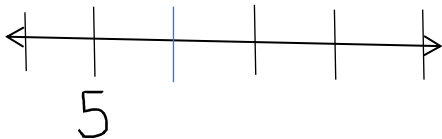
- iPads (1 per group)
- Animal Capsules (1 per student)
- Large Timer (1 per group)
- Clear Cups (1 per student)
- Recording Sheet (1 per student)

The Capsule and timer will tie this lesson together by combining both the anchor and supporting standards together. Once the students have made a time prediction in minutes, they will skip count by 5s using the large manipulative clocks as references from the previous activity. This will build on the math standard of skip counting up to 1000 since most students will likely predict anywhere from 3-5 minutes, which is anywhere from 180-300 seconds. The capsules will build on the science standard of life cycles, as it will present a concrete example for students to build on.

Evaluate (Math - Key)

Evaluate (Math)

1. What math method were we using to count?
2. What type of tool did we use to show our counting?
3. What numbers did we skip-count by?
4. Starting at 5 on the number line, count by 5's to 25 on the number line provided below:



5. Look at the patterns on the number line. Do you notice any patterns with the ending digits?

1. What math method were we using to count?

-Skip Counting

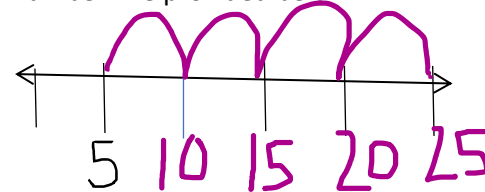
2. What type of tool did we use to show our counting?

-Number line

3. What numbers did we skip-count by?

-5s, 10s, and 100s

4. Starting at 5 on the number line, count by 5's to 25 on the number line provided below:



5. Look at the patterns on the number line. Do you notice any patterns with the ending digits?

-The ending patterns are 5, 0, 5, 0 and 5. Every other ending number is 5.

Evaluate (Science)

1. What are the stages an organism goes through throughout life known as?
2. What animal's life cycle did we study?
3. How many phases did the Frog go through during its life cycle?
4. What were the 4 stages of the Frog's lifestyle.
5. What method did we use to show the amount of time elapsed between each stage of our own organism's life cycle?

Evaluate (Science - Key)

1. What are the stages an organism goes through throughout life known as?
-Life Cycle
2. What animal's life cycle did we study?
-Frog
3. How many phases did the Frog go through during its life cycle?
-4
4. What were the 4 stages of the Frog's lifestyle.
-Egg, tadpole, froglet, Adult Frog
5. What method did we use to show the amount of time elapsed between each stage of our own organism's life cycle?
-Skip Counting by 10's