STEAM4Littles

Percy's Activity Book

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Welcome to **Percy's Amazing Adventure Activity Book**. The activities cover the age range of 3-7 years. Some may be too difficult for a 3-year-old or too easy for a 7-year-old.

LET YOUR creative juices flow and think about ways to adjust the activity to help your child participate in the task. An answer key is included at the back of the book for the activities requiring one. In addition, some General Education Standards are included on the final page.

Enjoy and Adventure On!

ART ~ Activity #1

Percival lives on a frozen continent call Antarctica. He lives with his colony (group of penguins) where they protect each other and play or hunt in the freezing waters.

Draw a picture of Percy doing something he might like to do.

ART ~ Activity #2

Make your OWN Percy and Pennie Sculpture!

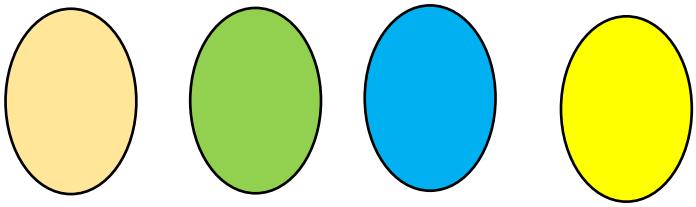
Here is what you need:

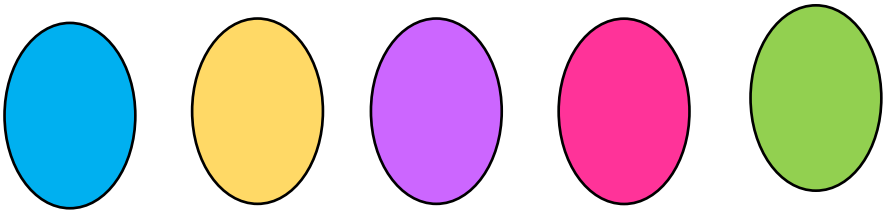
- **Homemade modeling clay: https://youtu.be/O4vWBFgnKZM**
  - **Baking soda, cold water, cornstarch, tempera paint for later**
- **Or storebought modeling clay from a craft store**
- **Use the pictures from your book as a model**
- **Form a penguin out of the clay by rolling, pinching, and smoothing the material.**
- **Be sure to make it large enough for your child's hands to manipulate easily**
- **When the shape is how you like it, use tempera paints to paint the penguin**
- **Let it dry overnight**
- **Take a picture and share with your friends and family**

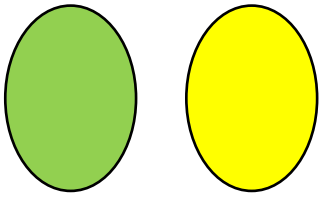
This is what my little sculpture looks like- I made this during a trip to Antarctica!

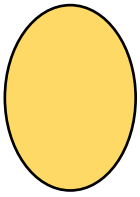
MATH ~ Activity #3

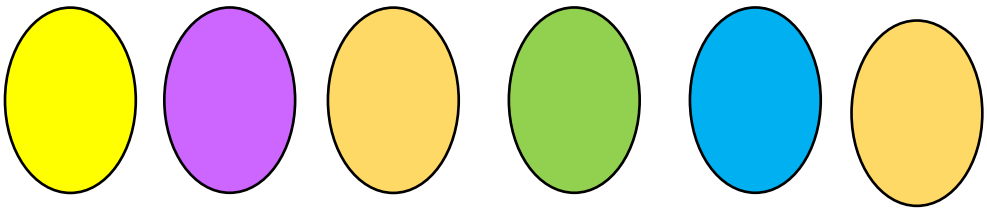
Count the number of penguin eggs in each rook:





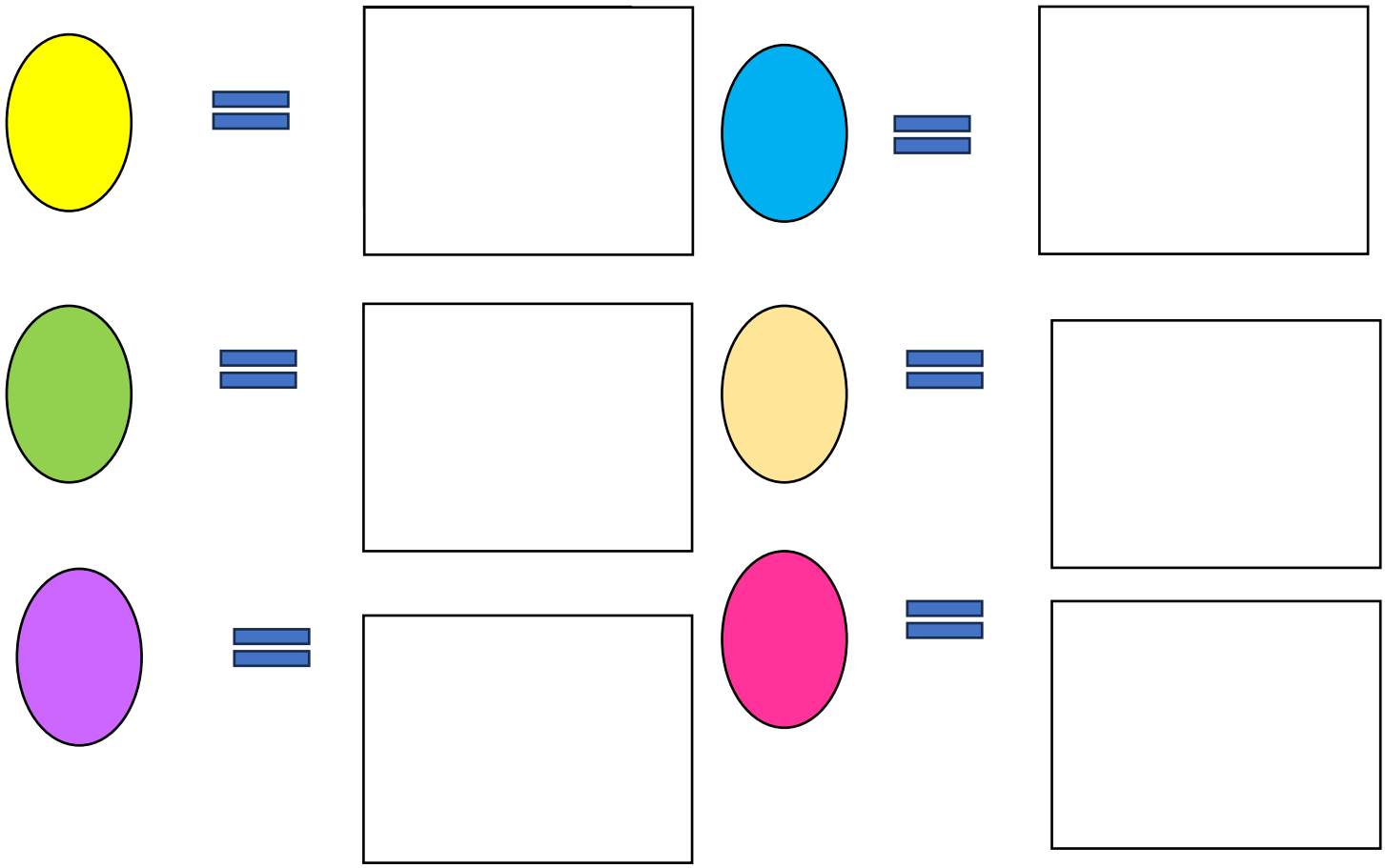




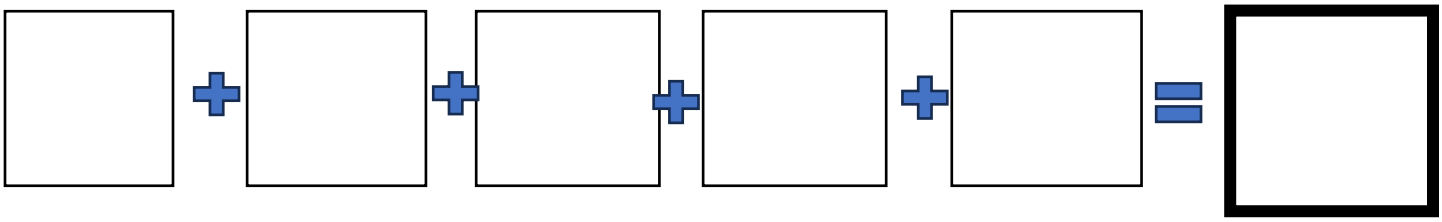


MATH ~ Activity #4

Look back at Activity 3. How many of each color egg does the colony have?

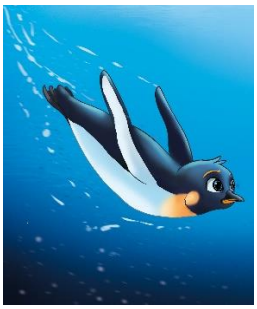


How many eggs do we have all together?



ENGINEERING ~ Activity #5

Design a maze to help Percy get the fish. He's hungry! ***(Hint-there are MANY ways to design a maze. Make sure the child knows what a maze is, then let THEM figure out a way to do it!)***



ENGINEERING ~ Activity #6

Build a crate to put YOUR sculpture in to keep it safe. THINK and TALK about what you need to do to make an object like a crate.

You can make it out of:

- **Paper**
- **Blocks**
- **Modeling clay**
- **Popsicle sticks**
- **Marshmallows**
- **Buttons**
- **?**

Keep it together with:

- **Tape**
- **Glue stick**
- **Toothpicks**
- **Modeling clay**
- **Paper clips**
- **?**

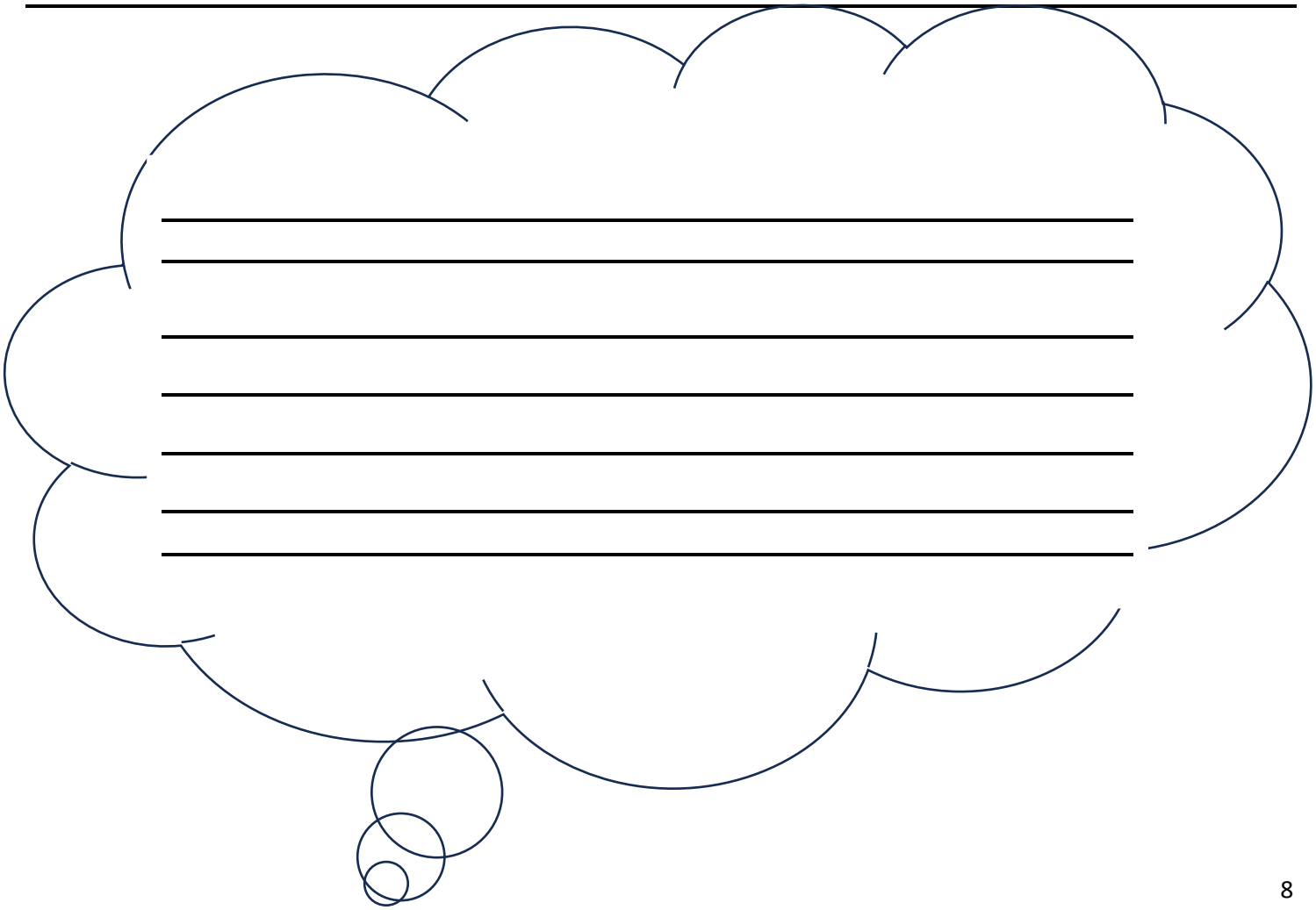
Take a picture of your creation to show everyone and be sure to tuck your penguin in at night to keep it safe!

TECHNOLOGY ~ Activity #7

One of the jobs an Antarctic scientist has is to monitor or watch the penguins to learn about how they live and to help keep them safe.

Ranger Roberts placed a GPS tag on Percy's lower back. Find some pictures of GPS tags (glue them on this page) and explain how a GPS tag can help the scientists.

Pictures:



TECHNOLOGY ~ Activity #8

Oh NO! You got stuck with some friends on the Antarctic Peninsula and the only way off is if a pilot in an airplane spots your group!

You have some 'high technology' – a satellite phone, but you might need to use some 'low technology' to guide the pilot to you. If the phone breaks, how can you call for help?!

Draw a picture or write down what you would do.

SCIENCE ~ Activity #9

How many different kinds of penguins live in the Antarctic?

Find a picture of each one and describe it in one sentence.

Chinstrap

Gentoo

King

Emperor

Adélie

Macaroni

Rockhopper

Megellanic

SCIENCE ~ Activity #10

What can we learn about penguins?

A. Is it a living or nonliving thing? _____

B. What kind of animal is it?

_____

C. How big do they get?

_____

_____

_____

D. What do they eat?

_____

E. What eats penguins!?

_____

_____

F. Where else in the world do they live?

_____

_____

_____

_____

ANSWER KEY- Activity #10

A	It breathes oxygen, has young, eats to survive and goes to the bathroom. It is a living thing.
B	Bird
C	Order of height: Emperor is the largest- 48 inches King – 37 inches Gentoo – 19.7 – 35.4 inches Chinstrap – 27 – 30 inches Magellanic – 23.6 – 29.5 inches Macaroni – 28 inches Adélie – 18-28 inches Rockhopper – 19.7 inches
D	Emperor- crustaceans, fish, squid Adélie- krill, fish Gentoo – crustaceans, fish squid Chinstrap – krill, fish Macaroni – fish, krill, squid Rockhopper – fish, krill, small crustaceans Magellanic – fish, krill, small crustaceans King – squid, fish
E	Natural predators are Orca, Sea lion, Leopard seal, Antarctic fur seal, Great white shark, South polar skua, Giant petrel Other predators: Humans
F	Galápagos Islands, South America, Africa, Australia, New Zealand, Subantarctic Islands, Falkland Islands

K-4 Academic Standards Met in These Activities

Source: https://www.educationworld.com/standards/

SCIENCE:

K-4.1 Science as Inquiry: As a result of activities in grades K-4, all students should develop

- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

K-4,3 Life Science: As a result of activities in grades K-4, all students should develop understanding of

- The characteristics of organisms
- Life cycles of organisms
- Organisms and environments

K-4.5 Science and Technology: As a result of activities in grades K-4, all students should develop

- Abilities of technological design
- Understanding about science and technology
- Abilities to distinguish between natural objects and objects made by humans

TECHNOLOGY: Source: https://cms-live-media.iste.org/ISTE_STANDARDS_2024.pdf

1.1 Empowered Learner: 1.1.d. Understand fundamental concepts of how technology works, demonstrate the ability to choose and use current technologies effectively, and are adept at thoughtfully exploring emerging technologies

1.5 Computational Thinker: 1.5.b. Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

ENGINEERING: Source: [Engineering practices as a framework for STEM education: a proposal based on epistemic nuances | International Journal of STEM Education | Full Text]

Educators continue to develop core competencies in the area of Engineering for K-12 STEM programs. This paper provides an excellent framework for the essential subtopics within a set of Engineering standards: This Activity book meets the highlighted targets.

1. Defining problems
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Designing solutions
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

ART: Source: [STEM vs. STEAM: Why the Arts Matter in STEM - TinkRworks]

[The principles of art in STEM education include[134]]: This Activity book meets the highlighted targets.

1. Balance: The distribution of visual weight in a composition.
2. Proportion / Scale: Understanding the difference in size or scale.
3. Emphasis: Spotlighting the star or main element.
4. Variety: Breaking the monotony.
5. Harmony: Finding the sweet spot.
6. Contrast: Grouping opposite elements to highlight differences.
7. Movement: Creating a sense of motion.
8. Pattern: Repeating elements for effect.
9. Rhythm: Creating a sense of movement through repetition.
10. Unity: Achieving a sense of whole or completeness.

MATH: Source: https://www.nctm.org/Standards-and-Positions/Principles-and-Standards/Principles,-Standards,-and-Expectations/

Understand numbers, ways of representing numbers, relationships among numbers, and number systems

Pre-K–2 Expectations:

- count with understanding and recognize "how many" in sets of objects;

Understand meanings of operations and how they relate to one another

Pre-K–2 Expectations

- understand various meanings of addition and subtraction of whole numbers and the relationship between the two operations;
- understand the effects of adding and subtracting whole numbers;

Compute fluently and make reasonable estimates

Pre-K–2 Expectations:

- develop and use strategies for whole-number computations, with a focus on addition and subtraction;
- develop fluency with basic number combinations for addition and subtraction;
- use a variety of methods and tools to compute, including objects, mental computation, estimation, paper and pencil, and calculators.