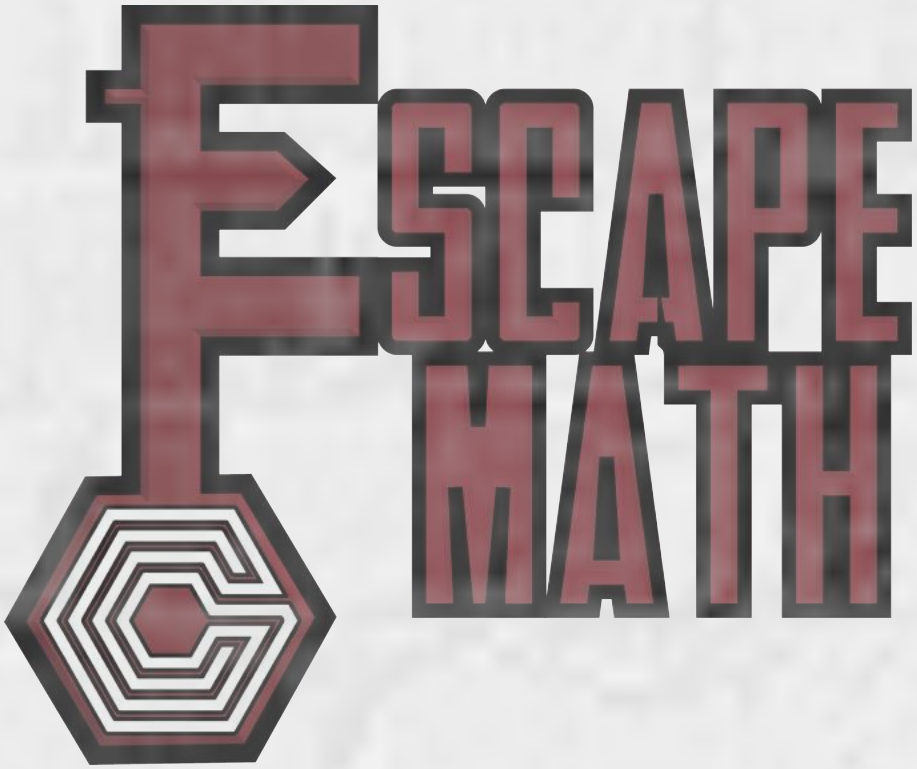
MEASURES OF CENTER



vocabulary/conceptual understanding/skill practice
small group activity

MEASURES OF CENTER

Ideal Unit: Measures of Center	**Time Range:** 1 Period	**Supplies:** Envelopes, Pencil & Paper

Topics of Focus: Mean, median, mode, range and standard deviation

Common Core Alignment:

6.SP.A.3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
6.SP.B.5c	Giving quantitative measures of center and variability as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
6.SP.B.5d	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.
HSS-ID.A.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

Procedures:

A.) You will need to determine the number of student groups you plan to have. This will work best with student groups of 3-5. You will need to have one set of envelopes and set of all the clues for each student group. You will need 4 envelopes for each student group. There are seven pages of clues. These will need to be cut apart in advance and placed in the correct envelopes. It would be wise to have an extra copy of this for you as teacher (not cut up).

B.) To begin, give each student group "Envelope 1". Students are given some pieces of clues that they will need later. Like in an Escape Room, this isn't always obvious. Let them struggle! If a group is falling behind, you can always provide a hint. After they have figured out how their clue fits together and solve the problems correctly. They will discover a "code". This is like a lock. Once they give you the correct code, you can give them their next envelop. If they are incorrect, you can make them wait 2 minutes before they can reapproach you. Can students escape the topic before time runs out? We'll find out.

As an option, you can use the Escape Math app for interactive locks! See the next page for links and the Class Code!

Options.) Should you want to have alternate endings, although the docs are not editable, you can use teacher magic tricks to change numbers to make different codes. I wouldn't recommend this until you've done the activity a few times. You may also find it works well to laminate the cutout and number them on the back with the envelope they are supposed to go in.

FOR INTERACTIVE LOCKS

CLASS CODE: 1-4-7-4

WANT A SPOOKY COUNTDOWN TIMER?

HTML

CLICK THE BUTTONS TO GO THERE!

THE STORY

As an option, you can read this to your class to prepare them for the activity.

You've been taken in the middle of an ordinary day and are now locked in a math class. This isn't your fault – this is what the law tells us needs to happen. Unfortunately you are not allowed to leave until you have an understanding of measures of central tendency and demonstrate the skill. You have ____ minutes to do so. If you know a bit about the Olympics, that can help.

There are four sets of envelopes with clues. You must determine the correct code to receive the next envelope. If you cannot Escape Math in the time allowed, you will be stuck in here forever.

ESCAPE MATH

VOCABULARY

Cut into 12 pieces **ENVELOPE 1**

Answer: as displayed

a. Mean	2. The sum of the values of the elements in a data set, divided by the number of elements.
b. Median	1. The middle number in a data set, or, if there is an even number of elements, the average of the middle two.
c. Mode	3. The most common element in a data set.
d. Range	5. The value of the highest element minus the value of the lowest element.
e. Outlier	4. An element that is distinctly separate from the rest of the data set.
f. Standard Deviation	6. A measurement of how spread out the elements of a data set are.

Cut out and place in **ENVELOPE 1**

1 VOCABULARY

Match the word with the definition. Substitute the numbers from the definition in for the correct letter. Simplify the expressions to get the four digit code.

a – b	c + d	e + 5	f
2 – 1 =1	3+5=8	4 + 5 =9	6

Answer: Code to receive Envelope 2 (1-8-9-6)

(The year of the first modern Olympic Games)

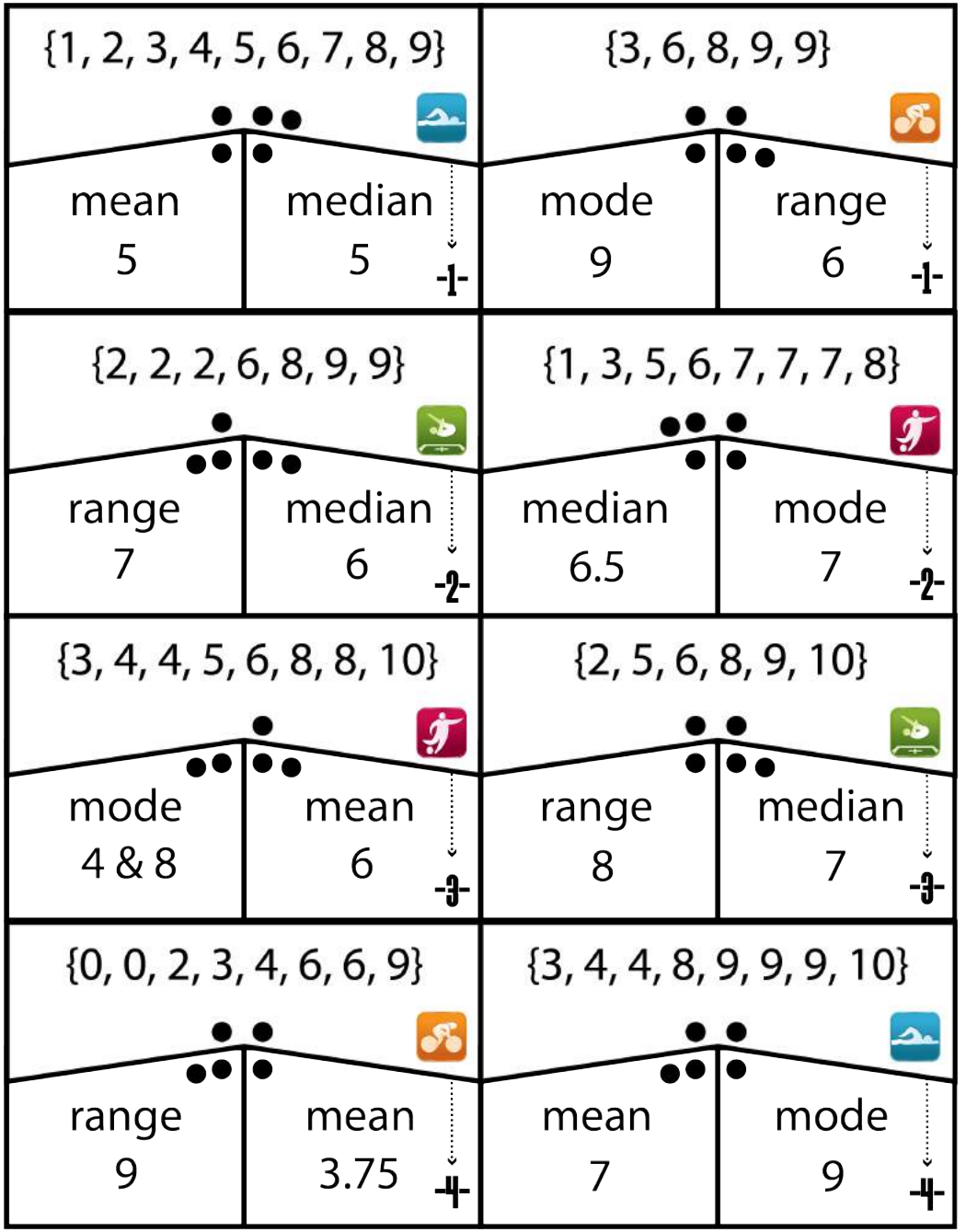
② CONCEPTUAL UNDERSTANDING

Eight data sets have two correct measures of center that when put together will make a rectangle. When connected correctly, there will be five dots in the center -- like the five Olympic rings.

Keep tabs on the events and the special numbers because you will need them for the next code.

Cut into 25 pieces and put in

ENVELOPE 2



CONCEPT CODE

Cut out and place in **ENVELOPE 2**

Add the special numbers from the data sets and measures with these icons to construct a code.

1+4=5 | 1+4=5 | 2+3=5 | 2+3=5

Answer: Code to receive Envelope 3 (5-5-5-5)

Cut and place into

ENVELOPE 3

IMAGE & CLUE

Piece together the two parts to the image. Wilma Rudolph is in the country where the Olympics were born. How many letters are in the country's name?

?

GREECE Answer: 6 letters

Cut and place into

ENVELOPE 2

Cut and place into

ENVELOPE 1

This info (?) is needed for the SKILL PRACTICE puzzle.
Cut and place into

ENVELOPE 3

Cut and place into **ENVELOPE 3**

ENVELOPE 3

Cut into 5 pieces and place in the envelopes below.

③ SKILL PRACTICE

Assemble the four pieces into a rectangle. You need to solve from left to right because some variables are needed in later problems.

?=6 from Greece Clue

a is the mean of this dataset

{2, 4, ?}

b is the median of this dataset

{a, 6, 8, 4, 9}

c is the range of this dataset

{a, b, 8, 5, 15}

d is the mode of this dataset

{a, b, c, 11, 6, 6}

e is the mean of this dataset

{a, b, c, d, 7, 14}

f is the median of this dataset

{a, b, c, d, e, 3, 8, 15}

g is the population standard deviation of this dataset

{a, b, c, d, e, f}

g reveals the code.

The Code's first digit is its ones place, second digit is its tenths place, and third digit is its hundredths place.

ENVELOPE 3

Answers

a=4, b =6

ENVELOPE 3

Answers

c=11, d=6

ENVELOPE 2

Answers

e=8, f=7

ENVELOPE 3

Answers

g=2.16 FINAL CODE 2-1-6

ENVELOPE 4

4 FINAL CHALLENGE

If you can piece together the final data set and solve for the measures of center -- you may, just may --

ESCAPE MATH.

Cut into 5 pieces and place in four different envelopes

ENVELOPE 1

ENVELOPE 4

{8, 4, 4, 8, 6, 1, 8, 9}

Code Part 1	Code Part 2	Code Part 3	Code Part 4
MEAN	**MODE**	**MEDIAN**	**RANGE**

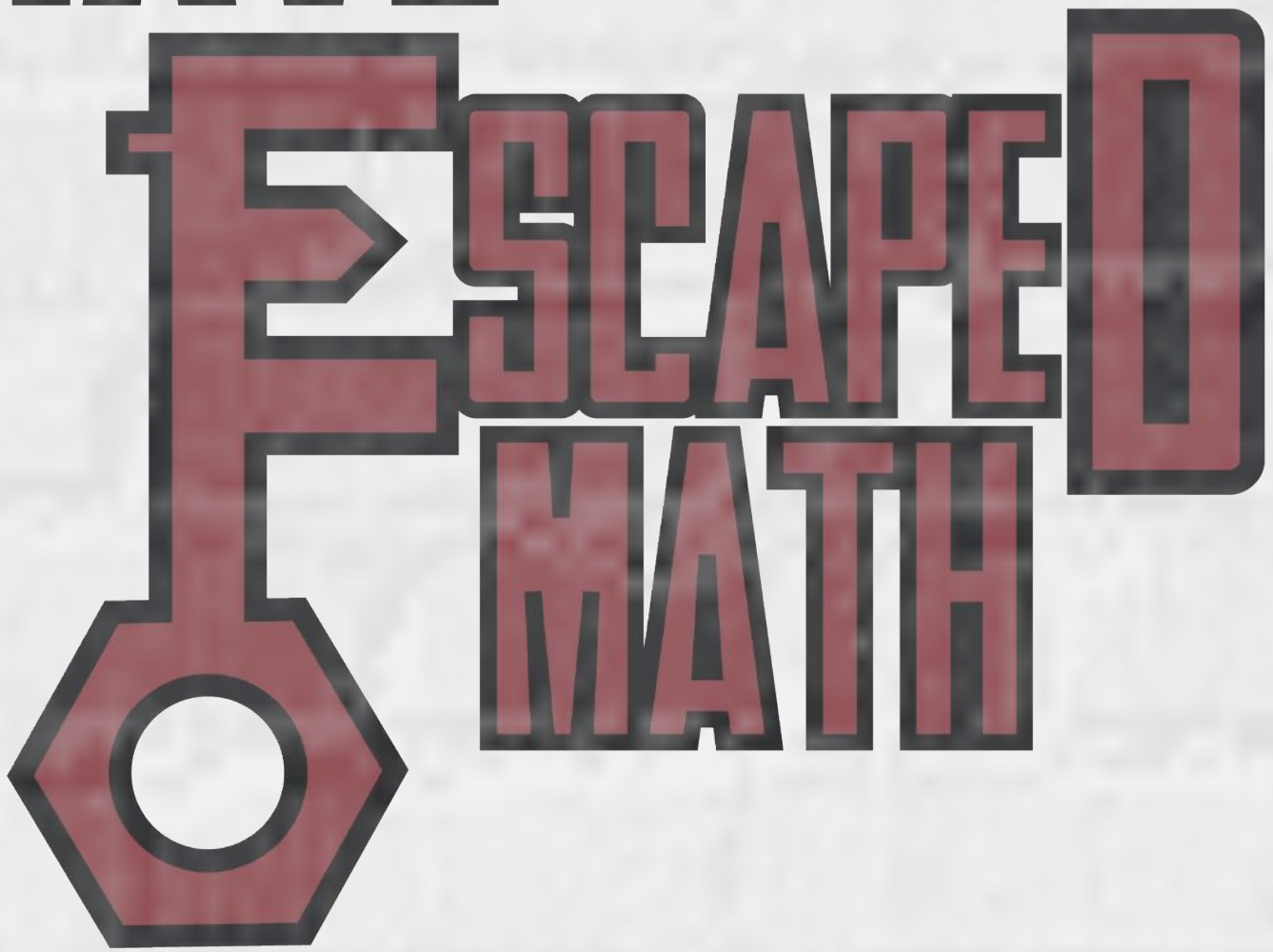
ENVELOPE 3

Mean = 6, Mode = 8 , Median = 7 , Range = 8

Answer: Final code: 6-8-7-8

ENVELOPE 2

I HAVE



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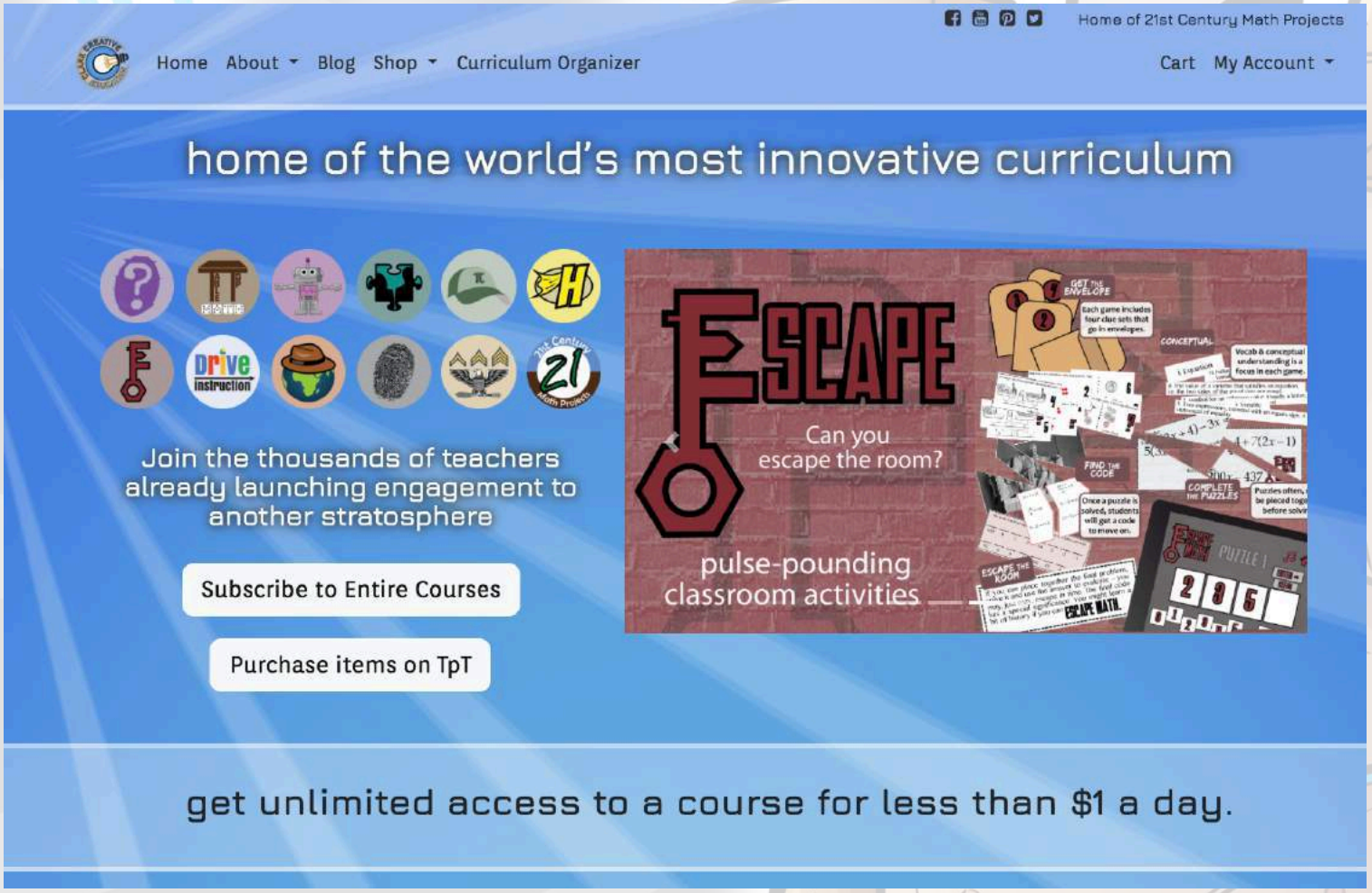

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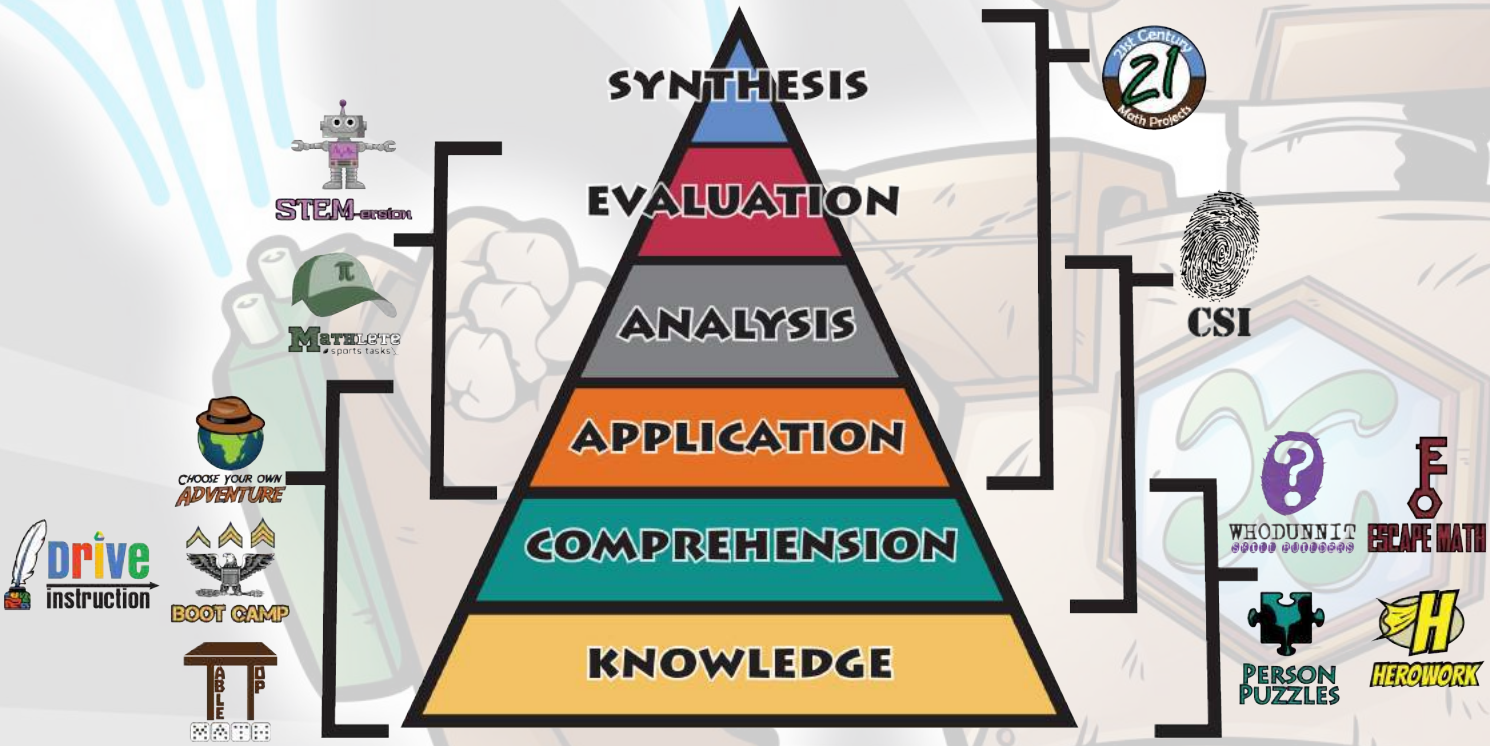

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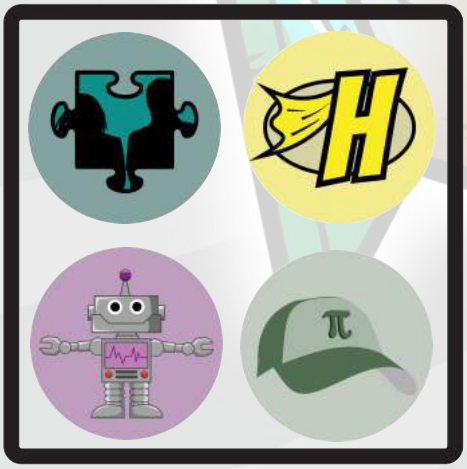
How much time?

Quick
~15-20 minutes



"A Class Period"
~45-60 minutes

Extended
3+ Days (can be modified)

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