Math 7-8 Activities- Menu I

| Curriculum |
| :--- |
| Connections |
| $\mathbf{M}$ |

Creating Futures, Leading and Instructions: Each day, choose from the options below. Choose as many or as few as you have time for.


Buddy's Hungry!
Which pet food should you buy?


Parallel Lines and Transversals
Click here to access the task instructions.


Khan Academy

## Five Cards

What are my five cards? Click here for clues!


Jellybean Probability There are three choices of jellybeans: red, yellow and green

If the probability of getting a red jellybean is $3 / 10$ and the probability of getting green jellybean is $2 / 5$, what is the probability of getting a yellow jellybean?

## Word Play

In this word game, you receive 2 points for a vowel, and 3 points for a consonant. Can you find words that score more than 30 points?


Would You Rather? Justify your reason with math.


Gizmos- Rock Art (Transformations)


Explorëlearning

How Long is All Along the Watchtower?


## Average Temperature

The average temperature in 6 European cities is $5^{\circ}$ Celsius.

What is the new average temperature, if two more cities, with temperatures of $12^{\circ}$ Celsius and $-6^{\circ}$ Celsius, are added to the


Exponent War


What's My Angle?
What is the value of $x$ ?


Noodle - Exploring Algebra!


LearnAlberta.ca

| Choice Board Background Information: |
| :--- | :--- | :--- |$\quad$| Choice boards were created to |
| :--- |
| provide flexibility in learning at |

## How Many Reese's Peanut Butter Cups Will He Eat?

Source: https://tapintoteenminds.com/3act-math/reeses/
This question can be broken up into two parts: 1) Estimate how many Reese's Peanut Butter Cups are in the picture. 2) How many Reese's Peanut Butter Cups do you think ErikTheElectric will eat?

|  | Too Low | Too High | Just Right |
| :---: | :---: | :---: | :---: |
| Estimate \# 1 |  |  |  |
| Estimate \# 2 |  |  |  |
| Reasoning \# 1 |  |  |  |
| Reasoning \# 2 |  |  |  |

Use the picture below to help determine your estimate or watch the following video here


Click here for the answer as well as an extension activity!

Learn at Home Activity Menu I: Grades 7-8 Math

May 25, 2020 - May 29,

# How Many Reese's Peanut Butter Cups Will He Eat? - Solution! 

## The Reveal!

ErikTheElectric ate all of the 250 Reese's Peanut Butter Cups that were stacked in front of him! Watch the video here.


## Extension \#1:



## Extension \#2:



At a party, guests ate 14 packages of Reese's Peanut Butter Cups.
There is 1 sixth cups of sugar in each package.
How much sugar is in 14 packages?

## What Are My Five Cards?

## Clues:

- I have five cards numbered 1 to 9.
- I put five of them down in a row.
- The $1^{\text {st }} \& 2^{\text {nd }}$ cards add to 13 .
- The $2^{\text {nd }} \& 3^{\text {rd }}$ cards add to 10 .
- The $3^{\text {rd }} \& 4^{\text {th }}$ cards add to 9 .
- The $4^{\text {th }} \& 5^{\text {th }}$ cards add to 11 .



# What are my cards? How many solutions are there? 

Click here for the solutions!

## What Are My Five Cards? Solutions

Source: https://webmaths.wordpress.com/rich-tasks/

## Solution \#1



## Solution \#2



## Solution \#3



# How Long is All Along the Watchtower? 

Estimate the length of the song, All Along the Watchtower, by Jimi Hendrix.

|  |  |  |  |
| :--- | :--- | :--- | :--- |
| Estimate | Too Low | Too High | Just Right |
| Reasoning |  |  |  |
|  |  |  |  |



Verify your estimate here or watch the video reveal here

## Who Wants to be a Millionaire?

If Jimmy has $\$ 1$ in dimes and nickels and he has twice as many dimes as nickels, how many nickels does Jimmy have?


# Click here to see the answer. <br> V 

## Who Wants to be a Millionaire?



If Jimmy has $\$ 1$ in dimes and nickels and he has twice as many dimes as nickels, how many nickels does Jimmy have?


## The reasoning:

To have twice as many dimes as nickels you could have 4 nickels and 8 dimes. Check to see if this would give you $\$ 1$.

If you have 4 nickels, you would have 20 cents $\$ 0.05 \times 4=\$ 0.20$
To make $\$ 1$ you would need 80 cents, or an additional 8 dimes.
The math:
$\$ 0.05 \times 4=\$ 0.20$
$\$ 0.10 \times 8=\$ 0.80$

## Jellybean Probability

There are three choices of jellybeans: red, yellow and green.


If the probability of getting a red jellybean is $3 / 10$ and the probability of getting green jellybean is $2 / 5$, what is the probability of getting a yellow jellybean?

## Solution:

We can work out the probability of getting a yellow jellybean by subtracting the other two probabilities from 1:

$$
\begin{aligned}
\text { Probability of Yellow } & =1-\frac{3}{10}-\frac{2}{5} \\
& =\frac{10}{10}-\frac{3}{10}-\frac{4}{10} \\
& =\frac{3}{10}
\end{aligned}
$$

## Average Temperature

- The average temperature in 6 European cities is 50 Celsius.

What is the new average temperature, if two more cities, with temperatures of $12 \circ$ Celsius and $-6 \circ$ Celsius, are added to the list?


Please click here to access Indigenous content.

Source: https://nrich.maths.org/13434


## Solution:

Finding the sum of the temperatures
The mean of the first 6 cities is the sum of all of the temperatures and then dividing by 6 .
So the sum of the temperatures, before dividing by 6 , must have been
$6 \times 5=30^{\circ} \mathrm{C}$.
When $12^{\circ} \mathrm{C}$ and $-6^{\circ} \mathrm{C}$ are added to the list, the new sum will be
$30+12-6=36^{\circ} \mathrm{C}$.
There are now 8 cities on the list, so the new average temperature can be found by dividing by 8 .
$36^{\circ} \mathrm{C} \div 8=4.5^{\circ} \mathrm{C}$ so the new average temperature is $4.5^{\circ} \mathrm{C}$


It seems that the average temperatures are rising world-wide.
Indigenous knowledge, stories, medicines are slowly being proven valid by modern day science.

Researchers have recently included the contributions of the Inuit in exploring occurrences and direction in combating climate change.

Watch the attached video to see this collaboration and the hope it is garnering.

## How Indigenous Knowledge...

# Multiplication Table <br> <br> What is each shape? 

 <br> <br> What is each shape?}


Click here to see the solution.
Source: https://sites.google.com/powayusd.com/math-walks/home

# Multiplication Table 

 What is each shape?

Solutions: Can you use math to prove each of these? Make sure you provide full and detailed solutions.


Source: https://sites.google.com/powayusd.com/math-walks/home

## Word Play



In this word game, you receive 2 points for a vowel, and 3 points for a consonant.
Word Value $=3 x$ the number of consonants $+2 x$ the number of vowels

The word teacher would be scored as 4 consonants

Word Value $=3(4)+2(3)=12+6=18$

1. Determine the value of each of the following words. Show your calculations.
a) Algebra
b) Variable
c) Constant
d) Integer
e) Pattern
f) Substitute
2. Write an algebraic expression that you could use to find the point value of any word.
3. Use your expression to calculate the value of six different words.

Can you find words that score more than 30 points?

## Click here to see the solutions.

## Word Play - Solutions

1. Determine the value of each of the following words.

Show your calculations.
a) Algebra Word Value $=3(4)+2(3)=12+6=18$
b) Variable Word Value $=3(4)+2(4)=12+8=20$
c) Constant Word Value $=3(6)+2(2)=18+4=22$
d) Integer Word Value $=3(4)+2(3)=12+6=18$
e) Pattern Word Value $=3(5)+2(2)=15+4=19$
f) Substitute Word Value $=3(6)+2(4)=18+8=26$
2. Write an algebraic expression that you could use to find the point value of any word.

$$
\begin{aligned}
\text { Word Value } & =3 \text { (Consonants) }+2 \text { (Vowels) } \\
& =3 \mathrm{C}+2 \mathrm{~V}
\end{aligned}
$$

3. Use your expression to calculate the value of six different words. Answers will vary

## Exponent War

Materials Required: Two standard decks of playing cards with the Jacks, Queens, and Kings removed.

Goal: To determine who has the higher power.
Game: Each player turns over two cards and chooses which card is the exponent and which is the base in order to achieve the highest value. The player with the higher value takes all four cards.

## Sample hand:

For example, an Ace and a 6 could be one to the sixth power, OR six to the first power.


| Option 1 | Option 2 |
| :---: | :---: |
| one to the sixth power | six to the first power |
| $\mathbf{1}^{6} \times 1 \times 1 \times 1 \times 1 \times 1$ | $=6$ |
| $=1 \times 1 \times 1$ |  |
| $=1$ |  |$\quad$| $6^{1}$ |
| :--- |


| Option 1 | Option 2 |
| :--- | :--- |
| three to the power of two | two to the third power |
| $3^{2}$ | $2^{3}$ |
| $=3 \times 3$ | $=2 \times 2 \times 2$ |
| $=9$ | $=8$ |

Player 1 should choose six as the base and 1 as the exponent. Player 2 should choose three as the base and two as the exponent.
In this hand player 1 would choose option 2 (with a value of 6) and player 2 would choose options 1 (with a value of 9).
Player 2 would win and keep all 4 cards. Play continues until one player has all of the cards from the deck.


Learn at Home Activity Menu I: Grades 7-8 Math

## Buddy's Hungry!

Buddy, one of the teacher's dogs, is very hungry. Ms. Jones stops at the pet store on her way home from school. She is always looking for the most economical buy. While at the pet store, she notices the following prices of pet food:

- Five 150 mL cans of Perfect Pet dog food for $\$ 1.26$
- Twelve 400 mL cans of Doggies Love It for $\$ 7.38$
- Ten 150 mL cans of Rover's Chow for $\$ 2.60$
- Six 400 mL cans of Man's Best Friend for $\$ 3.94$

Which pet food should Ms. Jones buy? Explain in as many different ways as possible. Make sure you provide full and detailed solutions.

Click here to see the solutions.

## Buddy’s Hungry! - Solution

Given:

- Five 150 mL cans of Perfect Pet dog food for $\$ 1.26$
- Twelve 400 mL cans of Doggies Love It for $\$ 7.38$
- Ten 150 mL cans of Rover's Chow for $\$ 2.60$
- Six 400 mL cans of Man's Best Friend for $\$ 3.94$

Which pet food should Ms. Jones buy? Explain in as many different ways as possible.

Here's one possible solution:

|  | Perfect Pet dog | Doggies Love It | Rover's Chow | Man's Best Friend |
| :--- | :---: | :---: | :---: | :---: |
| Determine the <br> total volume of <br> each brand of dog <br> food | Five 150 mL cans <br> $=5 \times 150$ <br> $=750 \mathrm{~mL}$ | Twelve 400 mL cans <br> $=12 \times 400$ <br> $=4800 \mathrm{~mL}$ | Ten 150 mL cans <br> $=10 \times 150$ <br> $=1500 \mathrm{~mL}$ | Six 400 mL cans <br> $=6 \times 400$ <br> $=2400 \mathrm{~mL}$ |
| Cost | $\$ 1.26$ | $\$ 7.38$ | $\$ 2.60$ | $\$ 3.94$ |
| Determine the <br> unit price of each <br> brand of dog food | $750 \mathrm{~mL} \div \$ 1.26$ <br> $=595 \mathrm{~mL}$ per dollar | $4800 \mathrm{~mL} \div \$ 7.38$ <br> $=650 \mathrm{~mL}$ per dollar | $1500 \mathrm{~mL} \div \$ 2.60$ <br> $=577 \mathrm{~mL}$ per dollar | $2400 \mathrm{~mL} \div \$ 3.94$ <br> $=609 \mathrm{~mL}$ per dollar |
|  | BEST value | WORST value |  |  |

## Can you think of another way to justify your response?

Learn at Home Activity Menu I:
Grades 7-8 Math

## Would You Rather?

Whichever option you choose, justify your reasoning with mathematics.


Flip 3 coins...

... win if all match

Roll 3 dice...

... win if none match

You may want to organize your thoughts in a table similar to the one below:

| Option A | Or | Option B |
| :---: | :---: | :---: |
|  |  |  |
| Conclusion: I would rather |  |  |
| Because ... |  |  |

Learn at Home Activity Menu I:

## Would You Rather? - Solution

Whichever option you choose, justify your reasoning with mathematics.


You may want to organize your thoughts in a table similar to the one below:

| Option A | Or | Option B |
| :---: | :---: | :---: |
| The probability of flipping 3 coins and getting the same result. <br> There are 8 possible outcomes when flipping 3 fair coins: HHH, HHT, HTH, THH, TTH, THT, HTT, TTT. All of these are equally likely since a coin has a 50/50 chance of heads/tails. Only two of these outcomes have all coins the same (HHH,TTT). So the likelihood of this happening is $2 / 8=0.25=25 \%$ | $\begin{aligned} & \frac{\subsetneq}{3} \\ & 0 \\ & 0 \\ & +\underline{V} \\ & \frac{v}{0} \\ & \frac{1}{0} \end{aligned}$ | The probability of rolling 3 dice and getting different results. <br> For all 3 dice to be different numbers, the first die has 6 possibilities, the second 5 and the third 4. Written as a product of probabilities out of 6 ( 6 -sided die) we get $\left(\frac{6}{6}\right),\left(\frac{5}{6}\right),\left(\frac{4}{6}\right)=\frac{120}{216}=0.555 \ldots=\sim 56 \%$ |
| Conclusion: I would rather |  |  |
| Click here to see how to solve this problem using Probability Trees! |  |  |

Learn at Home Activity Menu I:
Grades 7-8 Math

## Would You Rather- Solution \#2

Probability Trees
l

## What's My Angle?

In the diagram ST is parallel to UV.
What is the value of $x$ ?


## Hint:

It may help to look at this question in stages.
First find the missing angles using parallel lines and transversals. Then, solve for $x$ using triangle angle facts.


Click here to see the solution.

## What's My Angle? - Solutions

Note: There are may different ways to solve this question. Here is one possible solution.

Step 1:
Use parallel lines and other angles facts to find the two bottom angles in the triangle. It may help if you remove the top portion of the drawing to just focus on the parallel lines and the desired missing angles.

## Step 2:

Redraw the triangle with the determined angles (from above) and the unknown angle, $x^{0}$. Use triangle angle facts to solve for the desired unknown angle, $x^{0}$.

$$
x^{\circ}=180-46-48
$$

$$
=86^{\circ}
$$



## Angles, parallel lines, \& transversals M

Click the link here to access the task from Khan Academy.


## 8 Khan Academy

## Explorělearning

## Gizmos - Rock Art (Transformations)

 Instructions1. Go to www.explorelearning.com
2. Click on "Login/Enroll"
©
Request Info v
3. Enter "LZC47M" into the Student Class Enrollment

4. If you have used Gizmos before, enter your login information.

If you have not used Gizmos, create an account!

| ENROLL IN CLASS: Class 1 - Class 1 TAUGGT BY: Leamne Devin |  |
| :---: | :---: |
| conim the cass pow |  |
|  | - |
|  | $\rightarrow$ |

5. Click on "Rock Art (Transformations)" to launch the Gizmo!
Rock Art (Transformations)

- Create your own rock art with ancient symbols. Each symbol can be translated, rotated, and reflected. .
Lesson Info

6. Your screen should look like this!


Math 7-8 Activities Menu I
以令 Curriculum Expectations

# How Many Reese's Peanut Butter Cups Will He Eat? 

## Grade 7 \& 8

Specific: solve multi-step problems arising from real-life contexts and involving whole numbers and decimals, using a variety of tools and strategies.

Five Cards Mathematical Processes

## Problem Solving

Develop, select, apply, and compare a variety of problem-solving strategies as they pose and solve problems and conduct investigations, to help deepen their mathematical understanding.

## Reasoning and Proving

Develop and apply reasoning skills (e.g., recognition of relationships, generalization through inductive reasoning, use of counter-examples) to make mathematical conjectures, assess conjectures and justify conclusions, and plan and construct organized mathematical arguments.

## Who Wants to be a Millionaire?

Number Sense and Numeration

## Grade 7

Specific: Solve problems involving the multiplication and division of decimal number to thousandths by one-digit whole numbers, using a variety of tools and strategies.

## Grade 8

Overall: Solve problems by using proportional reasoning in a variety of meaningful contexts.

## Multiplication Table

Mathematical Processes

## Problem Solving

Develop, select, apply, and compare a variety of problem-solving strategies as they pose and solve problems and conduct investigations, to help deepen their mathematical understanding;

## Selecting Tools and Computational Strategies

Select and use a variety of concrete, visual, and electronic learning tools and appropriate computational strategies to investigate mathematical ideas and to solve problems.

## Buddy's Hungry!

Number Sense and Numeration

## Grade 7

Overall: Demonstrate an understanding of proportional relationships using percent, ratio, and rate.
Specific: Solve problems involving the calculation of unit rates.

## Grade 8

Overall: Solve problems by using proportional reasoning in a variety of meaningful contexts. Specific: Solve problems involving rates.

## Parallel Lines and Transversals Geometry and Spatial Sense

## Grade 8

Specific: Determine, through investigation using a variety of tools, the angle relationships for intersecting lines and for parallel lines and transversals, and the sum of the angles of a triangle.
Specific: Solve angle-relationship problems involving triangles (e.g., finding interior angles or complementary angles), intersecting lines (e.g., finding supplementary angles or opposite angles), and parallel lines and transversals (e.g., finding alternate angles or corresponding angles).

How Long is All Along the Watchtower? Number Sense and Numeration

## Grade 7

Specific: use estimation when solving problems involving operations with whole numbers decimals, and percents, to help judge the reasonableness of a solution.

## Grade 8

Specific: use estimation when solving problems involving operations with whole numbers, decimals, percents, integers, and fractions, to help judge the reasonableness of a solution.

## Jellybean Probability

Number Sense and Numeration

## Grade 7

Specific: Add and subtract fractions with simple like and unlike denominators, using a variety of tools and algorithms.
Grade 8
Specific: Solve problems involving addition, subtraction, multiplication, and division with simple fractions.

Data Management and Probability

## Grade 7

Specific: research and report on real-world applications of probabilities expressed in fractions, decimal, and percent form

## Grade 8

Overall: use probability models to make predictions about real-life events

## Word Play <br> Patterning and Algebra

## Grade 7

Specific: Translate phrases describing simple mathematical relationships into algebraic expressions using concrete materials.
Specific: Evaluate algebraic expressions by substituting natural numbers for the variables.

## Grade 8

Specific: Describe different ways in which algebra can be used in real-life situations.
Specific: Evaluate algebraic expressions with up to three terms, by substituting fractions, decimals, and integers for the variables.

## Would You Rather?

Data Management and Probability

## Grade 7

Specific: research and report on real-world applications of probabilities expressed in fractions, decimal, and percent form;
Represent in a variety of ways all the possible outcomes of a probability experiment involving two independent events and determine the theoretical probability of a specific outcome involving two independent events.

## Grade 8

Specific: identify the complementary event for a given event, and calculate the theoretical probability that a given event will not occur

## Gizmos - Rock Art (Transformations) <br> Geometry and Spatial Sense

## Grade 7

Specific: create and analyse designs involving translations, reflections, dilatations, and/or simple rotations of two-dimensional shapes, using a variety of tools and strategies.

## Grade 8

Specific: identify, through investigation, real-world movements that are translations, reflections, and rotations.

## Average Temperature

Data Management and Probability

## Grade 7

Overall: Make and evaluate convincing arguments, based on the analysis of data.
Specific: Determine, through investigation, the effect on a measure of central tendency of adding or removing a value or values.

## Grade 8

Overall: Apply a variety of data management tools and strategies to make convincing arguments about data.
Specific: Determine, through investigation, the appropriate measure of central tendency needed to compare sets of data.

## Exponent War <br> Number Sense and Numeration

## Grade 8

Overall: Represent, compare, and order equivalent representations of numbers, including those involving positive exponents.
Specific: Express repeated multiplication using exponential notation.

## Mathematical Processes-Communicating

Communicate mathematical thinking orally, visually, and in writing, using mathematical vocabulary and a variety of appropriate representations, and observing mathematical conventions.

What's My Angle?
Geometry and Spatial Sense

## Grade 8

Specific: Solve angle-relationship problems involving triangles (e.g., finding interior angles or complementary angles), intersecting lines (e.g., finding supplementary angles or opposite angles), and parallel lines and transversals (e.g., finding alternate angles or corresponding angles).
Mathematical Processes - Problem Solving
Develop, select, apply, and compare a variety of problem-solving strategies as they pose and solve problems and conduct investigations, to help deepen their mathematical understanding.

## Noodle -Exploring Algebra! Patterning and Algebra

## Grade 7

Specific: evaluate algebraic expressions by substituting natural numbers for the variables.

## Grade 8

Specific: evaluate algebraic expressions with up to three terms, by substituting fractions, decimals, and integers for the variables

