

***Please keep your video off
and microphone muted.***



***Use the chat for questions
and/or comments. Unless
you really just want my
attention and you can
unmute and call out.***

enVision 7

Topic 3

Analyze & Solve Percent Problems

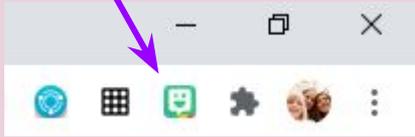
Danielle Weaver
Southern Middle School
Mathematics (11) & Special Education (2)

School year 2020- 2021

#GOALS



Choose, plan, and implement grade level assignments that are differentiated and will challenge the students in your classroom.



Bitmoji is an extension in Chrome

This is purposefully long and full of links and ideas which you can explore in your own time.

This presentation has been uploaded on MILC

[Back to School Math Virtual "Mini" Conference 2020](#)-> Document Sharing> Subject: Grade Level Assignments for Student Understanding

General ideas to be shared.

enVision resources

- Access
- PD video
- Today's Challenge
- STEM Project
- 3 Act Task

Additional Resources

- Desmos
- MAP Mathshell
- TPT (teachers pay teachers)
- Twitter (accounts and hashtags)
- Various websites

This would be my 2nd grader who had to come into school with me today ...
Notice the "face mask" of day ...
[#peacebewithyouf2fteachers](#)
[#yesthatisaonesiepj](#)



Kinda how I feel at the moment ...



And
Maybe
How
You
Feel
Too ...

Hello bro... u are good at math, right?

Hi yes, i'm

good....If i cut a cake into 3 pieces, each piece will be 0.333 of the main piece, right?

correct

Ok if we multiply 3 by 0.333 we get 0,999

so what happened to 0.001?!!

u will find it on the knife

ohh..thanx

"The basics"

Accessing the online text/materials

- drive.google.com

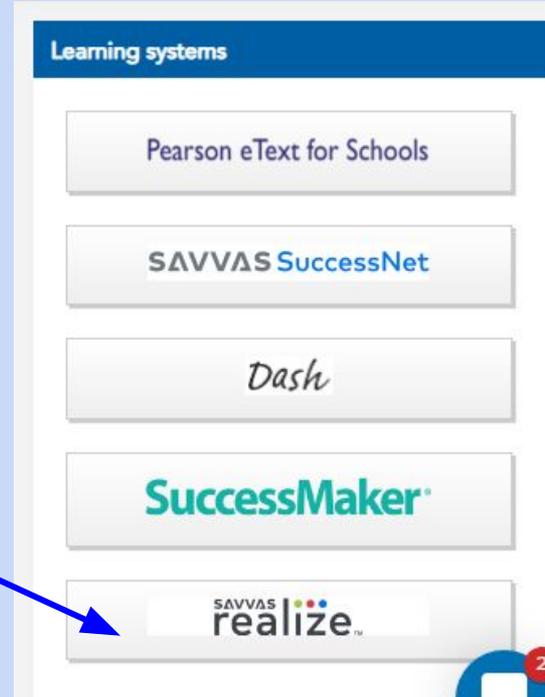


- waffle (apps) > EasyBridge

- Learning system - SAVVAS realize

**Reminder you need to *add products* to add the text to each course/class you are teaching

Instead of the course and book



Look under Future Courses

Topic 3 - Analyze and Solve Percent Problems

Lessons

3-1 Analyze Percents of Numbers

3-2 Connect Percent and Proportion

3-3 Represent and Use the Percent Equation

3-4 Solve Percent Change and Percent Error Problems

3-5 Solve Markup and Markdown Problems

3-6 Solve Simple Interest Problems

Pearson PD video

Topic “main idea”



Topic 3: Analyze and Solve Percent Problems >



🔒 Teacher's Edition eText: Grade 7 Topic 3

+ Add to Playlist 📄 Info



🔒 Topic 3: Professional Development Video

+ Add to Playlist 📄 Info

** can create playlists
(but that is another session)

Video is 2:37 minutes long

$$y = kx$$

$$k = \frac{y}{x} = \frac{\text{part}}{\text{whole}} = \text{percent}$$

$$\text{part} = \text{percent} \times \text{whole}$$

Helpful and I don't use them nearly enough

enVision - Today's Challenge



Topic 3: Today's Challenge

Assign

Add to Playlist

Info

Teacher resources

Today's Challenge

Make Sense

What is Player 2's **average** number of attempted free throws per game?

MP1 Persevere

Season Free Throw Data

Player Rank	Games Played	Free Throws Made	Free Throws Attempted
1	80	308	337
2	60	145	160
3	78	183	203
4	64	227	252
5	82	289	321

DAY 2

Be Precise

In professional basketball, free throw percentages are written in decimal form to the thousandths place. Choose a player. **Write a fraction** representing that player's successful free throws, and then **convert it to a decimal.**

MP6 Precision

enVision - Today's Challenge

DAY 3

Critique

In professional basketball, free throw percentages are written in decimal form to the thousandths place. In a newspaper article, Players 3 and 4 are listed as having the same free throw percentage. Do you agree? Justify your answer.

MP3 Arguments

DAY 4

Look for Relationships

If Player 5 continues to make free throws at the same rate, how many free throws would you expect Player 5 to make in the next 30 attempts? Show at least 2 different ways to solve this problem. Which method do you like best and why? MP7 Structure

Extend Your Thinking

Suppose Player 1 is fouled at about the same rate next season, shoots 275 free throws, and makes the free throws at the same rate as shown in the table. How many free throws do you predict Player 1 will make? How many games do you predict Player 1 will play in?

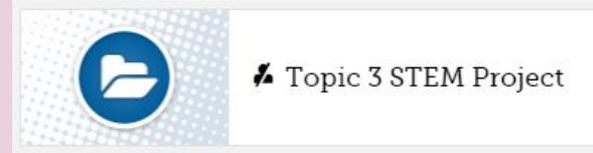
DAY 5

MP8 Pattern

I enjoy the STEM project with almost each topic.

enVision - STEM Project p.134

Activity Trackers - Pedometers



Be sure to
watch the
video

Typically I “assign” the STEM Project video to the students and they watch on their own after they complete the previous topic assessment.

I will post some basic questions and students will research the topic then create and share a google slides presentation with their answers/findings.

Students can share with the class (or appt) for bonus or a HW pass.



The fluency page is bonus* for some*

**The fluency practice page is due within 1 week of the topic assessment.

enVision - STEM Project p.134

Activity Trackers - Pedometers

Give students a chance to show off -- what do they know

Do they know someone who wears one?

What is the daily recommended number steps?

What types of devices exist and what do they do?

** It is currently 2 p.m. Ms. Pack woke up at 7 a.m. and has 7000 steps. I woke up at 6 a.m. and have 8000 steps. How many steps do they **each earn per hour**? If this pattern should continue, **who will have more** steps by 6 p.m.? How many steps will they each have? (Can you **model** this example?)



I think these are best when kids to work with their own questions

3 Act Task - The Smart Shopper

Act 1 - opening video - purchasing items at a game store

What is the lowest total they can spend?

After sharing the question enVision wants I usually ask what additional information they think they need to be able to best answer this question.

Act 2 - slide show of item prices and coupons

Act 3 - ending video w/answer



MP2, MP3, MP5



3 Act Tasks

If Act 1 and 2 allow for a variety of questions to be answered, consider grouping the class and let them each solve a different question.

Student groups can then create a quick chart displaying their question and solutions. Then allow students to walk around and review the work and thinking of the other groups.

3 Act Tasks - Other locations

Dan Meyer (Twitter @ddmeyer)



Spreadsheet of his 3 Act Tasks which you can sort by standard

https://docs.google.com/spreadsheets/d/1jXSt_CoDzyDFeJimZxnhgwOVsWkTQEsfqouLWNNC6Z4/edit



<https://tapintoteenminds.com/3acts-by-common-core/grade7-ccss/>

Making Math Moments That Matter (Podcast) @MakeMathMoments

Kyle Pearce from TapIntoTeenMinds.com (Twitter @MathletePearce)

&

Jon Orr from MrOrr-IsAGeek.com (Twitter @MrOrr_geek)



Has become a “go-to” for the last 3 years

Additional Resources - Desmos

teacher.desmos.com

free account and syncs with Google login

> Classroom Activities

Distance Learning - Grade 7

*create *collections*

- Adding Integers (card game of sums)
- Pool Border Problem (numerical expressions)
- Des-Farm (part to whole ratios)
- Click Battle (proportional reasoning)
- The Running Game (linear representations)
- Marcellus the Giant (scale drawings)



I first learned about demos from Twitter

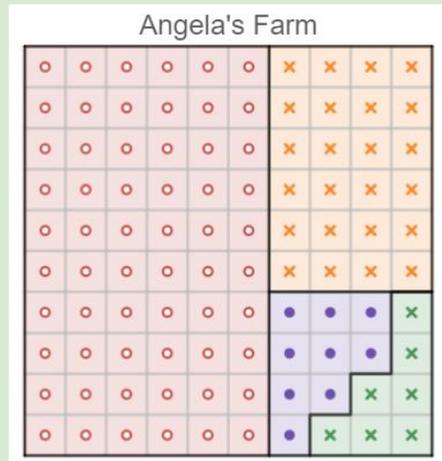
Additional Resources - Desmos

Des-Farm (part to whole ratios)

MWT 3BV

****Similar** Balloon Float**

teacher.desmos.com



Determine the equivalent fraction, decimal and percent representation.

Which of the four descriptions are true?

(Select all that apply.)

- 6% of the farm has red flowers.
- 0.07 of the farm has trees.
- 24% of the farm has orange flowers.
- $\frac{9}{10}$ of the farm has purple flowers.

Go to student.desmos.com
and type in:

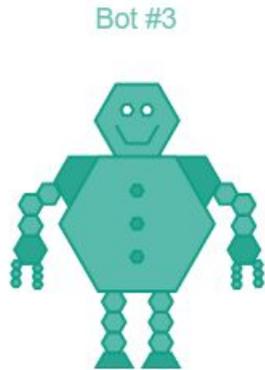
MWT 3BV

Create a mod version & share link with specific students

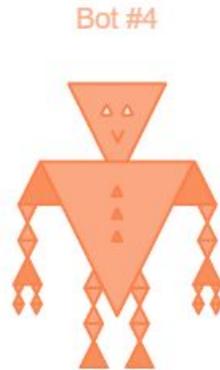
Additional Resources - Desmos

Click Battle (proportional reasoning)

Exploring unit rates

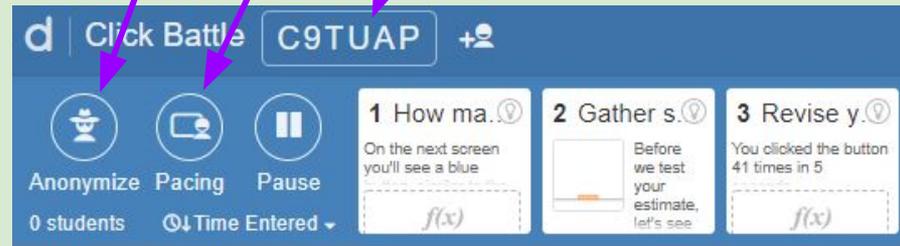


36 clicks
5 seconds



26 clicks
3 seconds

Snip of the Dashboard



Go to student.desmos.com
and type in:

C9T UAP

Usually an awesome resource but is lacking in the 7RP category

Additional Resources - MAP Mathshell

MAP - Mathematics Assessment Project

www.map.mathshell.org

Formative Assessment Lessons (FALs)

Summative Assessment Tasks

FALs are my FAV and I try to do at 1 each quarter.



Additional Resources

Apprentice Tasks

www.map.mathshell.org

25% Sale

<https://www.map.mathshell.org/download.php?fileid=1042>

25% sale

In a sale, the store reduces all prices by 25% each week.

Does this mean that, after 4 weeks, everything in the store will cost \$0? If not, why not?

Mathematical Content Standards

This task asks students to select and apply mathematical content from across the grades, including the *content standards*:

- ▶ **7.RP:** *Analyze proportional relationships and use them to solve real-world and mathematical problems.*

25% Sale

In a sale, all the prices are reduced by 25%.

1. Julie sees a jacket that cost \$32 before the sale.
How much does it cost in the sale?

\$ _____



Show your calculations.

In the second week of the sale, the prices are reduced by 25% of the previous week's price.

In the third week of the sale, the prices are again reduced by 25% of the previous week's price.

In the fourth week of the sale, the prices are again reduced by 25% of the previous week's price.

Additional Resources

Apprentice Tasks

www.map.mathshell.org

25% Sale

<https://www.map.mathshell.org/download.php?fileid=1042>

2. Julie thinks this will mean that the prices will be reduced to \$0 after the four reductions because $4 \times 25\% = 100\%$.

Explain why Julie is wrong.

3. If Julie is able to buy her jacket after the four reductions, how much will she have to pay?

\$ _____

Show your calculations.

Julie buys her jacket after the four reductions.
What percentage of the original price does she save?

_____ %

Show your calculations

Great Think-Pair-Share activity. Or use as a formative, provide feedback, and regroup. (Kinda like what is done with the FAL pre-test.)

Additional Resources

TPT

Converting Fractions, Decimals, and Percents Math Wheel

by Cognitive Cardio
with Middle School
Math Moments

FREE - What is not to love?!?
Turn it into a coloring contest



Additional Resources

TPT

[PERCENT Exit Tickets](#)
[FREE!](#)

by Kacie Travis

Each one has a problem and a "Rate your understanding" at the bottom. What a great idea and an easy thing to create/include on all formative and summative assessments.

Name: _____
Solve. Show work.
65% of what number is 195?

Name: _____
Estimate how to find 15% tip on \$9.79. Explain your thoughts.

Name: _____
Find the percent of decrease from 40 to 24. Show work.

Rate your Understanding

Circle the hand to rate your understanding: Thumb Down- I'm Lost; Middle Thumb- Need Practice; Thumb Up- I've Got It!



standing

o rate your
ach: One- I'm Lost;
; Three- I've Got It!
ax 1 2 3
ion 1 2 3
ce 1 2 3

Additional Resources

TPT

[Percent of a Number Guided Practice - Free Activity](#)

by Lindsay Perro

Easy enough to modify... but instead of shortening maybe create a work map. Have the students start with #3. Then #4, #1, #2, #5

Challenge-Two ways to determine the answer*

Percent of a Number Guided Practice

To determine the percent of a number you need to remember two key points:

- The word "of" means Multiply!
- Percents must be changed to decimals before you can multiply with them.

Example:

What is 70% of 150?

Step 1: Change the percent to a decimal by moving the decimal two places to the left. Remember, the decimal in a whole number is at the end – just like a period is at the end of a sentence.

on your own:

Step 2: Multiply the percent

1. What is 30% of 250? _____ = _____
Show your work here!

2. What is 40% of 55? _____ = _____
Show your work here!

3. What is 10% of 780? _____ = _____
Show your work here!

4. What is 20% of 1,300? _____ = _____
Show your work here!

5. What is 90% of 800? _____ = _____
Show your work here!

6. The Smith family went out to dinner and received great service. They decided to leave a 20% tip for their waitress. If their dinner bill totaled \$90, how much was the tip? *Think: You need to find what percent of what number? Show your work!*

Additional Resources

TPT

[Percent of a Number](#)
[Escape Room Activity](#)
[- FREE CHALLENGE](#)

by Lindsay Perro

Match-It CHALLENGE

Percent of a Number: Part, Whole & Percent

Directions: Solve each problem. Find the correct answer on the cards in the envelope. Lay the answer card on top of the question it answers. Once you have all the answer cards laid down, your code will be revealed.

10 is 20% of what number?	28 is what percent of 40?
44 is 55% of what number?	

①
②
③

④

Hint Card

CHALLENGE

Percent of a Number: Part, Whole & Percent

- The percent of a number is found by multiplying the percent, as a decimal, by the given number.
 - Find 42% of 60 by multiplying 0.42×60 . 42% of 60 is 25.2
- To find the whole when given the part and the percent, divide the part by the percent as a decimal.
 - 48 is 60% of what number? Find by dividing $48 \div 0.6 = 80$. 48 is 60% of 80.
- To find the percent when given the part and the whole, divide the whole by the part and multiply your answer by 100.
 - 70 is what percent of 120? Find by dividing $70 \div 120 = 0.58\bar{3}$
 $0.58\bar{3} \times 100 = 58.\bar{3}$ so 70 is 58.3% of 120.

MATH Escapes

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Additional Resources

TPT

{FREE} Scavenger Hunt: Percent

by Edison Education

Meant as a scavenger hunt but if still in virtual learning consider placing these on GSlides and using Pear Deck to allow students to respond. Students can even work at their own pace.

Josephina likes the service she receives at her favorite café and wants to leave a 20% tip. Her bill is \$22.00. How much should she leave as a tip?

60%

What is 35% of 750?

25%

A rose bush grew from 24 inches to 36 inches in two weeks. What was the percent increase?

\$47.52

Additional Resources

TPT

[Percent Problems Task Cards and Recording Sheet](#)
[*FREEBIE*](#)

by To the Square Inch-
Kate Bing Coners

#1

Caroline took a math test and got 19 out of 25 questions correct. What percent of the questions did she answer correctly? What percent did she answer incorrectly?

#7

Jenna and Richie go shopping at the mall to buy their mom a present. They buy a scarf for \$12.45 and a necklace for \$35.65. Their state charges 8% sales tax. How much does sales tax do Jenna and Richie pay on the gifts they bought? Round your answer to the nearest cent.

Online Project

Researching an animal species, it's population increase or decline, and study what natural causes or interference has caused this change.



National Geographic  @NatGeo · 2h

Habitat degradation, invasive species, disease, pollution, and overfishing are major threats to migratory fish around the world



Many freshwater fish have declined by 76 percent in less than 50 years
Around the world, migratory freshwater fish numbers are dropping faster than migratory species both on land and in the ocean, a new study finds.

[nationalgeographic.com](https://www.nationalgeographic.com)

Great openers and can be tailored easily

Additional Resources

<https://www.wouldyourathermath.com/>

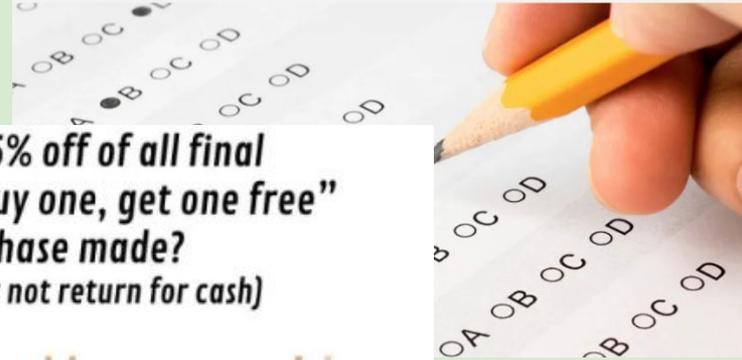
Twitter

#WYRmath

No matter the grade level or class. Allow students to create their own. Place them in a jar and draw them out. *Pre-read and meet with the student to adjust as needed*

You get your SAT score back.
Would you rather be in the 93rd percentile **OR** get a 93%?

Receive a lifetime discount of 45% off of all final purchase prices **OR** receive a “buy one, get one free” discount for every lifetime purchase made?
(must take the “free” discount and may not return for cash)



Fun to hear students reason their answers

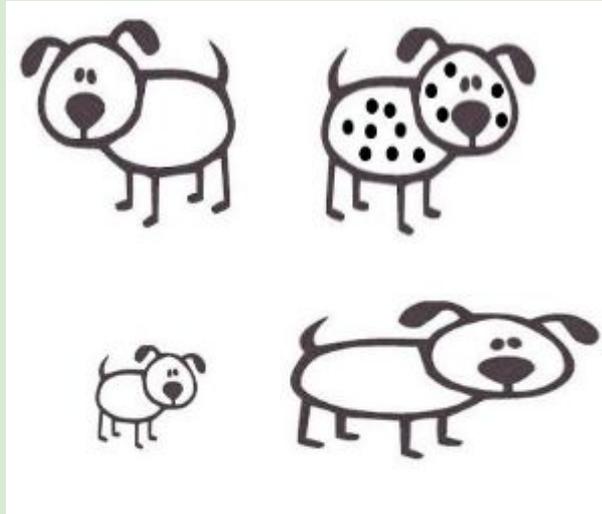
Additional Resources

Which One Doesn't Belong

<https://wodb.ca/>

Website of various
sorted prompts

- shapes
- numbers
- graphs



33%	$\frac{1}{3}$
$\frac{5}{3}$	$\overline{.6}$

NUMBER 33

from Erick Lee

Give me one answer or give me an answer for why each could not belong in the set. MP1, MP2, MP3, MP7

Additional Resources

Which One Doesn't Belong

<https://wodb.ca/>

From Twitter

#WODB

 **Howie Hua** @howie_hua · Jul 17
Made a [#wodb](#). Which one doesn't belong and why?

$\frac{1}{2} + \frac{1}{4}$	$\frac{1}{2} - \frac{1}{4}$
$\frac{1}{2} \times \frac{1}{4}$	$\frac{1}{2} \div \frac{1}{4}$

Like an IXL but more “fun”

Additional Resources

<https://www.mathgames.com>

IT SAYS GAMES!!
That has to make it better....right?!?

The screenshot shows the 'Money' section of the IXL website. At the top, there is a yellow header with a dollar sign icon and the word 'Money'. Below this, there is a list of eight math topics, each in a white box with a yellow border. Each box contains a topic ID, a star icon with a progress indicator, the topic name, and a mobile device icon.

Topic ID	Progress	Topic Name	Mobile Icon
7.8	0/20	Consumer Math: Unit Prices	Yes
7.28	0/15	Unit Prices with Unit Conversions Up to 20	Yes
7.29	0/15	Unit Prices with Unit Conversions Up to 40	Yes
7.47	0/15	Sale Prices: Find the Original Price	Yes
7.58	0/15	Compound Interest	Yes
7.62	0/15	Simple Interest	Yes
7.63	0/20	Percent of a Number: Tax, Discount, Tip	Yes

Additional Resources

<https://www.mathgames.com>

7.32	0/15	Percent Change	
7.36	0/15	Estimate Percents of Numbers	
7.37	0/15	Solving Proportions	
7.38	0/15	Percent Equations	
7.41	0/5	Percents of Numbers and Money Amounts	
7.42	0/5	Percents of Numbers	
7.43	0/15	Percent Equations	
7.44	0/15	Percent Change	
7.45	0/15	Find the Percent: Tax, Discount	

Additional Resources

<https://www.mathgames.com>

[Simple Interest - Grade 7 - Practice with Math Games](#)

The screenshot shows the Math Games website interface. At the top, there is a navigation bar with icons for Grades, Skills, Games, Standards, Worksheets, and Arcade, along with a yellow 'Subscribe' button. Below the navigation bar, the page title is 'Simple Interest'. On the right side, there is a speaker icon and a 'Scratch Pad' button. The main content area contains a word problem about Sophia's savings account. Below the problem, there are four blue buttons representing possible answers: \$0.50, \$0.70, \$0.80, and \$3.70.

Math Games

Grades Skills Games Standards Worksheets Arcade

Subscribe

Simple Interest

Scratch Pad

Sophia has \$23 in a savings account. The interest rate is 20% per year and is not compounded. How much interest will she earn in 1 year? Use formula $i = p * r * t$, where i is the interest earned, p is the principal (starting amount), r is the interest rate expressed as a decimal, and t is the time in years.

Austin has \$7 in a savings account. The interest rate is 10% per year and is not compounded. How much interest will he earn in 1 year? Use formula $i = p * r * t$, where i is the interest earned, p is the principal (starting amount), r is the interest rate expressed as a decimal, and t is the time in years.

\$0.50

\$0.70

\$0.80

\$3.70

Additional Resources

www.math-play.com

<https://www.math-play.com/Simple-Interest/Simple-Interest.html>

What is the simple interest if you borrow \$200 for 3 years at an interest rate of 10 percent?



Click on the money to show the amount, and then press SUBMIT.

Total:

\$0

Submit

Reset

Score: 0



I played this longer than needed

Additional Resources

www.quia.com

Battleship

<https://www.quia.com/ba/108800.html>

Battleship Answer the following question (medium)

Start over

Interest on \$250 at 1% for 2 years.

\$2
\$2.50
\$5
\$25

In person classes - consider playing kids vs teacher. Cards are placed in the center like a typical card game. It is only a HIT if you answer the question correctly.

Challenge - Teacher solves with an error and students must determine the error in setup or calculation.

Additional Resources

www.mathplayground.com

Math at the Mall 2

(Original Troy's Toys)

<https://www.mathplayground.com/mathatthemall2.html>

To Mall

Troy's Toys
Big sale today!
Save 75% on all toys.

Troy's Toys
Big sale today!
Save 75% on all toys.

Total: \$64.00
Discount: \$48.00
Sale Price: \$16.00

Check

Select and move a maximum of 5 toys to the counter. When you're ready to continue, press the Check button for the first question.

This is a great activity to do in breakout rooms and assign roles.

(1) total (2) discount (3) sale price (4) math check

I did this one with my 2nd grader. She was able to understand the main idea.

If you have Twitter it can be a great community

Additional Resources - Twitter searches

Search Twitter using keywords



KatyKin @katy_kin · Nov 11, 2019

Did you know that there are over 18.2 million military Veterans living in the United States today? **50% percent** of those Veterans are older than 65.



New York Post @nypost · 12h

NYC's 47 shootings last week are **176 percent increase** since last year
trib.al/2DFR0Sw



iGotOffer @iGotOffer · Jul 26

#Apple sells around 17 billions of **#AirPods** per year, about **0.5 percents** of items are bound to be faulty. It gives 850 millions of faulty items. Hence the illusion that ALL AirPods are prone to overheating. If you ran into a bad pair of headphones, take them to the repair shop.

Additional Resources - Twitter searches

Search Twitter using keywords



The Library Owl 🌻 🧙 🦉 @SketchesbyBoze · Jul 21

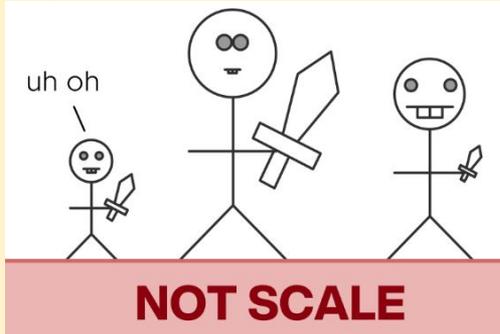
Y'all ready for some good news?!

- print fiction sales are up 31 **percent** since March
- fiction sales have risen 10 **percent** this year
- 300 million books were sold in the US in the first half of the year, a 3 **percent increase** over last year

Twitter searches

What would your face look like if it was 20% “too large” compared to the rest of your body?

Goes well with the desmos activity *Marcellus the Giant*



Cameron

@cameronmattis

the good news is my custom facemask arrived, the bad news is that they printed my face 20% too large



Additional Resources - Twitter Accounts

Brian Marks

@yummysmath



Brian Marks @Yummymath · Oct 20, 2019

New Halloween **math** activity - predict your Halloween candy haul, then find your **percent error**. yummysmath.com/2019/how-much-... **#math** #mtbos #msmath

Last year for Halloween, my friends and I predicted how many pieces of candy we would get trick-or-treating. After we went out trick-or-treating, we each counted the number of pieces of candy that we received. Our predictions & our actual totals are below.

Name	Prediction	Actual
Me	100	135
Max	40	62
Jen	50	44
Sofia	25	35

Who do you think did the best at predicting their

Additional Resources - Twitter Accounts

I Teach Math

@iteachmathAll

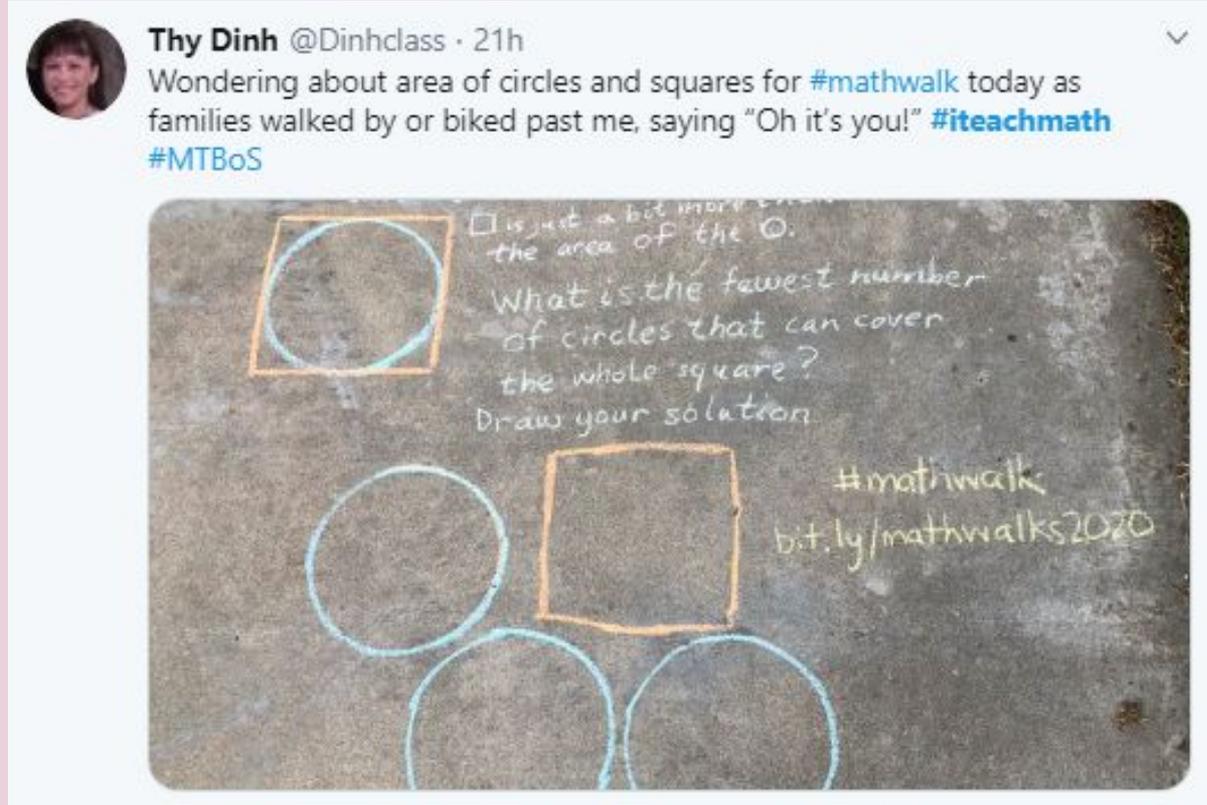
@iteachmathMS

@iteachmathG7

@iteachmathEqty

@iteachmathLead

@iteachmathAsmt



This man's mind blows my mind

Additional Resources - Twitter Accounts

John Rowe

@MrJohnRowe



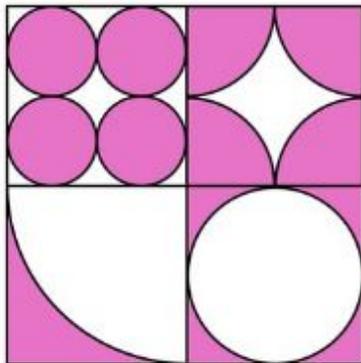
Is an amazing creator with @desmos

John Rowe 🇺🇸 @MrJohnRowe · Jun 19

What fraction is shaded?

@NatBanting, this blew my mind.

#MTBoS #iTeachMath @FractionTalks



I love that he is in Australia so when I wake up in the morning he has already posted great things.



John Rowe 🇺🇸 @MrJohnRowe · Sep 20, 2019

This lovely little @openmiddle problem arrived in my email today and just had to share it!!

Use the digits 0-9, without repetition, fill the blanks.

#MTBoS #iTeachMath (Credit: Denise White)

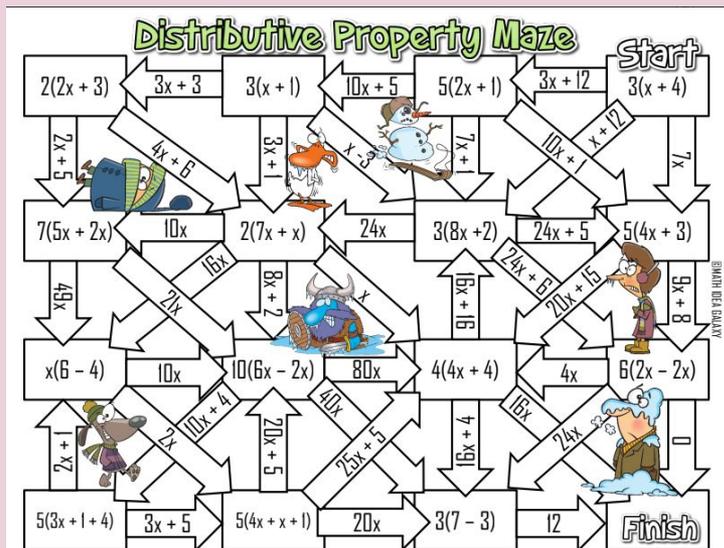
$$\frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square} = \frac{\square \square}{\square \square}$$

I have signed up for the monthly newsletter and I enjoy the mazes a lot

Additional Resources - Twitter Accounts

Mashup Math

@mashupmath



mashupmath
TWO TRUTHS + ONE LIE!
 Use your math skills to determine which of the three statements below is a dirty lie! Explain how you made your decision.

= 2 = 5 = 0

1 × = 8 +

2 = ×

3 - × =

mashupmath math challenge #2 of 17 of the day

+ + =

× 1 =

+ = 24

+ = 6

+ + = ?

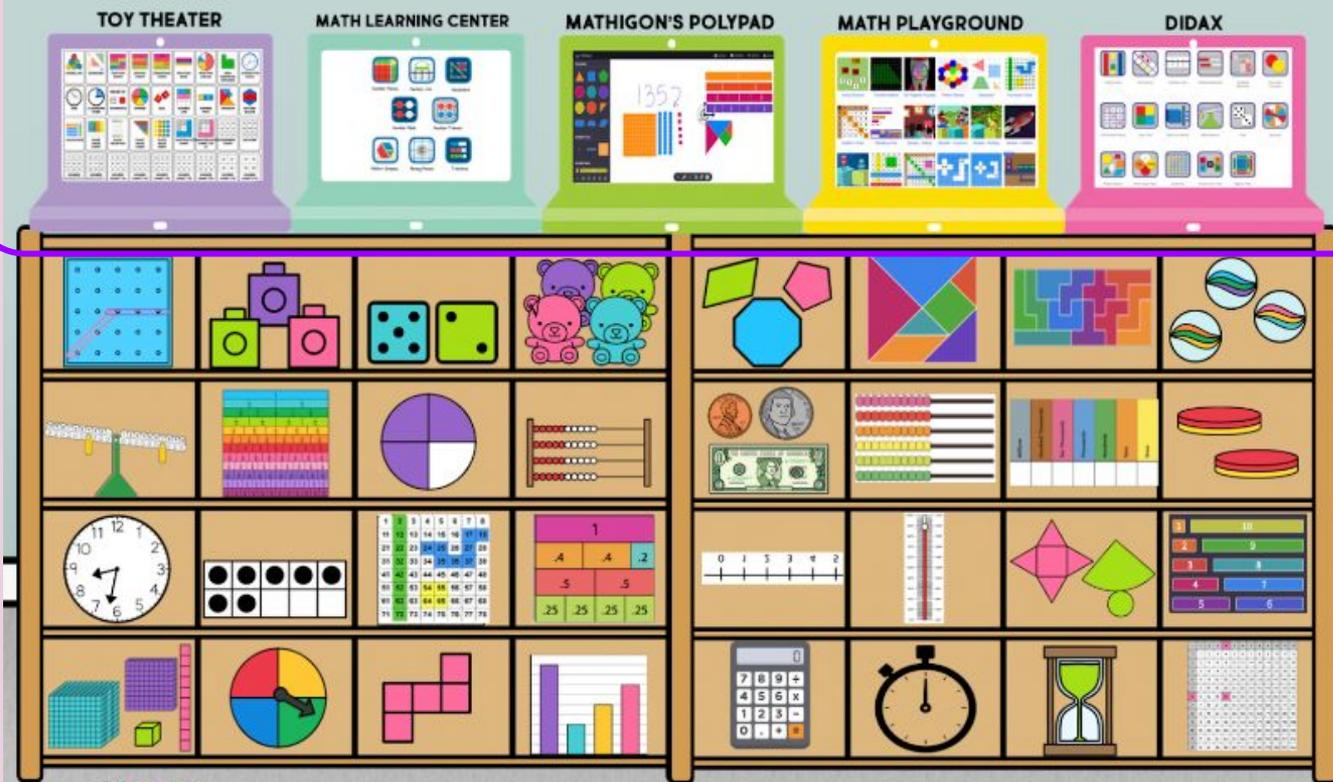
Modify the math challenge by providing an items value or sharing what line to start with.

*Challenge - create your own line and share with a classmate or hide an item in the final line and ask them to decide.

Additional Resources

Virtual Math Manipulatives

****This top row has other manipulative websites****



Julie Smith

@JGTechieTeacher

Virtual Math Manipulatives

There are plenty more.... Like A LOT

Additional Resources - Twitter Hashtags

#MTBos Math Twitter Blog-o-Sphere

#iteachmath

#mathchat #mathschat

#noticewonder

#mathematicsinaction

#mathematicsmemes

#mathisthebestsubject (pretty much just Feese and I)

Which one doesn't belong?

mashupmath ▶

$$\text{Green Hulk} \times \text{Spider-Man} = \text{Spider-Man} \times \text{Green Hulk}$$

$$\text{Wolverine} \times 2 = \text{Wolverine} + \text{Wolverine}$$

$$\text{Aunt May} + \text{Aunt May} + \text{Aunt May} = 3 \times \text{Aunt May}$$

$$\text{Deadpool} \div 1 = \text{Deadpool} + 0$$

Hopefully you got something from this.
Contact me if needed.

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