Problem of the Day #1

WHY MATH?!?

Write down 3 careers that you might like to do when you are done with school.

How do you think that you will use math in those careers?

Problem of the Day #2

Gettin Gritty!

Watch the following video: What is Grit?

Click here to take the quiz.
What's your grit score?

Problem of the Day #3

GOAL SETTING

What is one thing that you are proud of from last school year? (Does not have to be math specific)

What is one thing that you want to improve on this year?

Goal Setting journal page

Problem of the Day: Cybersecurity

Irrational numbers are complex and don't repeat, they are helpful in making codes for keeping information secret. Encryption methods often use these numbers to mix up and unscramble data, making it harder for others to understand. In our digital world, sensitive information is kept safe using the complex nature of irrational numbers. This makes it very hard for others to decode the encryption.

List 5 numbers that you would use to make a code that would keep information secret. (IRRATIONAL NUMBERS)

List 5 numbers that you would use to make a code that would NOT keep information secret. (RATIONAL NUMBERS)

Interested in Cybersecurity? Click here

8.NS 1.

Problem of the Day: Civil Engineering

Civil engineers use π to figure out how much space is inside things shaped like cylinders, such as silos or water tanks.

If the volume of a steel Silo is 350π yd^3, about how much can the silo hold? Round to the nearest cubic yard.

About how many tons is that? (Multiply by 1.4 to convert cubic yards to tons)

Which silos hold MORE than the silo above?

400π yd^3

1000 yd^3

1500 tons

Interested in Civil Engineering? Click Here

8.NS 2.

Problem of the Day: Financial Literacy

If you were given $100, what would you do with it?

Money Basics video

Interested in being a Financial Analyst?
Click Here

Problem of the Day: Social Media

Companies are hiring young people to make viral content for their brands. Their work is made possible by a powerful math concept: **exponential growth**. To explore this math, let's model the process of video sharing. Imagine that a small company hires a talented social media intern. The intern posts a video. On the first day, only three people (the intern and her parents) watched the video. Every day the number of views doubles. The situation is moduled by the equation below:

$Y = 3(2)^x$

Y is the number of views and x is the number of days.

How many views will there be after 5 days?

After how many days will the views exceed a million?

Interested in public relations? Click Here

8.EE 1.

Problem of the Day: Landscaping

A customer wants you to create a **square-shaped** flower bed with an area of 36 square meters. What will be the length of each side of the square flower bed?

To solve this problem, use the formula for area of a square. Substitute 36 for "A" and solve for s.

$A = s^2$.

A new customer wants the area of a garden to be 121 square meters. Use the same process to calculate the length of each side of the garden.

8.EE 2.

Interested in landscaping? Click here

Problem of the Day: Manufacturing

At Markin Tubing, the tubes must be cut to be accurate to the nearest $1/25^{th}$ of an inch. The inspector uses a computer that reports the error in scientific notation. What is 1/25 written in scientific notation?

8.EE 3.

Interested in Markin Tubing?
Click here

Problem of the Day: Medical Technician

A normal amount of red blood cells in your blood is about 4×10^6 cells per liter.

A normal amount of white blood cells in your blood is about 5×10^9 cells per liter.

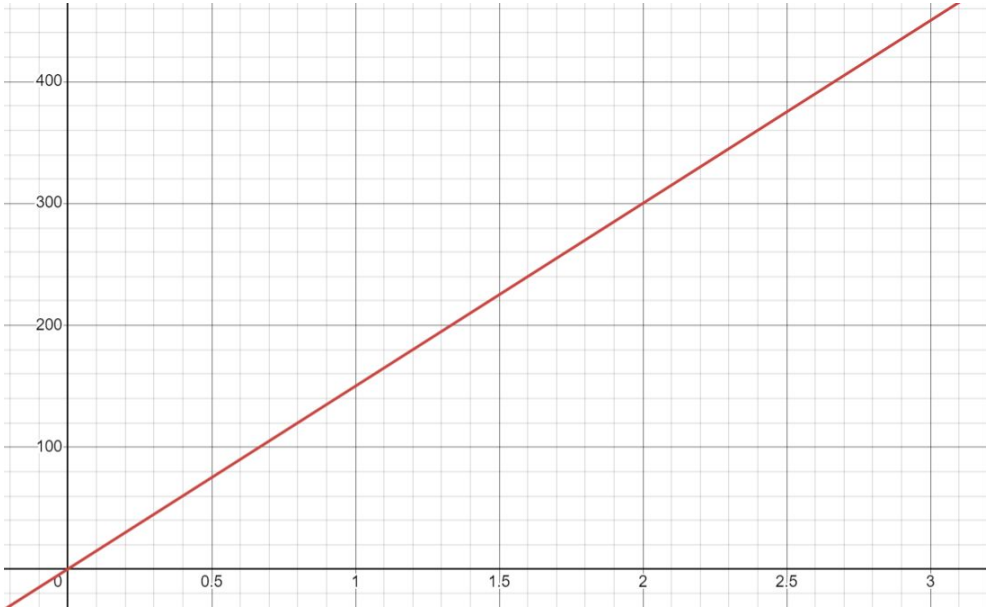
In your blood, what is the ratio of white blood cells (WBC) to red blood cells (RBC)?

8.EE 4.

Interested in becoming a Medical Technician? Click Here

Problem of the Day: Manufacturing

Calculate the production rate in units per hour given that 500 containers of sour cream were produced in 5 hours.



On a second production line, the data for sour cream production is shown in the graph below.

Which line had the fastest production rate?

How do you know?

8.EE 5.

Interested in hood dairy? Click here

Problem of the Day: Culinary Arts

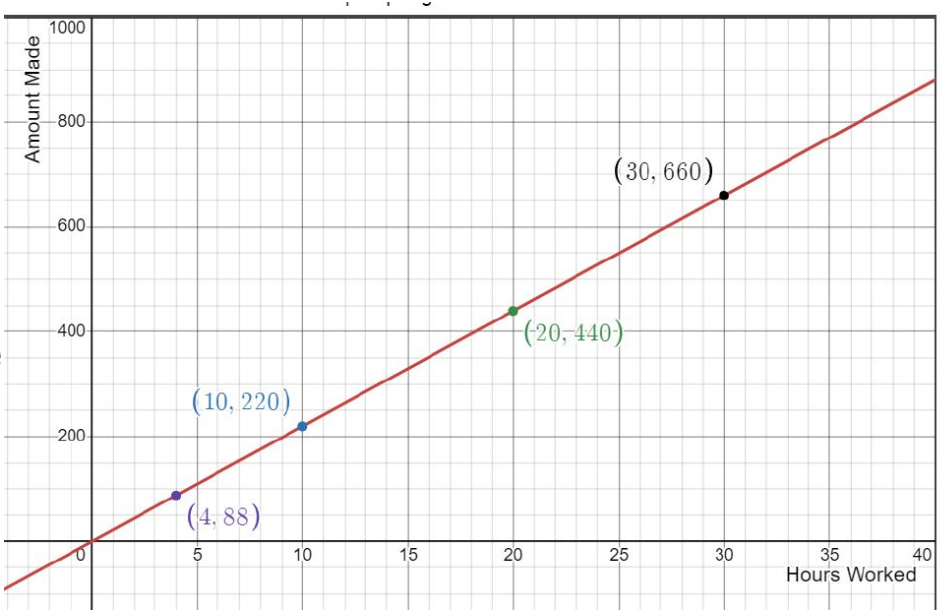
A line cook gets paid an hourly wage. The amount he makes is graphed below.

What is the slope of the line from (4,88) to (10,220) ?

What is the slope of the line from (10,220) to

(30, 660) ?

Can you generalize the answers above? Analyze the slope in context of the problem.



Interested in Culinary Arts? Click Here

8.EE 6.

Interested in nursing? Click here!

Problem of the Day: Nursing

A CSN at Warsaw Nursing Home has a starting pay of $19.50 per hour.

Write an algebraic equation using x to represent the hours worked and and y to represent the total money earned.

Use your equation to answer the following:
How much will she earn after working 40 hours?

How many hours will she have to work to earn $1000?

8.EE 7.

Problem of the Day: Electrician

The following is sample problem from the test you need to take to apply for an apprenticeship in the Electrical Industry

Consider the following formula:

$$a = \frac{1}{2}b - 4$$

Which of the following statements is true for this formula?

A. When the value of b is less than 8, a is negative.
B. When the value of b is greater than 8, a is negative.
C. When the value of b is less than 8, a is positive.
D. When the value of b is greater than 4, a is positive.

Interested in becoming an Electrician? Click here

8.EE 7.

Problem of the Day: Personal Finance

Let's say you're considering two cell phone plans:

- Plan A is $55/month and includes a free phone.
- Plan B is $40/month but you need to buy a phone.

If you can buy an unlocked phone for $300, which is cheaper over a 24 month period?

Write an equation to represent both plans.

8.EE 8.

Problem of the Day: Finance

Use the basic equation, I=PRT

where I represents the amount paid in interest, P represents the principal amount borrowed, R represents the rate of inter[illegible] decimal form), and t represents the time it takes to repay the loan.

This formula represents a function. If you substitute the appropriate values for P, R, and T, you will calculate the value of I.

How much interest would a person owe if they charge $2000 on a credit card with a 20% interest rate for 1 year?

If the amount of interest owed is $600 and the amount borrowed was $2000 for 4 years, what is the percent interest?

Interested in finance? Click here!

8.F 1

Problem of the Day: Electrician

The following is sample problem from the test you need to take to apply for an apprenticeship in the Electrical Industry

Consider the following table:

X	Y
0	-5
1	-4
2	-3
3	-2
4	-1
5	0
6	1

Which of the following choices represents the same relationship as demonstrated in this table?

Which of the following choices represents the same relationship as demonstrated in this table?

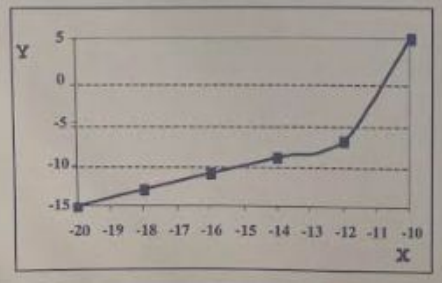
A.

X	Y
10	-40
20	-30
30	-20
40	-10

B. $Y = \frac{X}{2} - 5$

C. Y is equivalent to the difference between the value of X and a constant C, where C equals 5.

D.



Interested in becoming an Electrician?
Click here

8.F 2

Problem of the day: Manufacturing

Steve packs boxes at Novolex When steve arrived at work, 30 boxes were already full. He continues to pack 15 boxes each hour. Write an equation to show this relationship.

Is this function linear or nonlinear? How do you know?

8.F 3

Problem of the Day: Restaurant Management

The LeRoy country club has banquet facilities to accommodate a maximum of 250 people. When the manager quotes a price for a banquet she is including the cost of renting the room plus the cost of the meal. A banquet for 70 people costs $1300. For 120 people, the price is $2200.

1. Determine the slope of the line. What quantity does the slope of the line represent?

2. Write an equation to model this real-life situation.

Interested in restaurant management? Click Here

Problem of the Day: Manufacturing

A machine operator at Koike Aronson, Inc earns $22.50 per hour and "Time and a half" for every hour over 40 hours in a week. If she works 51 hours this week, how much will she earn? Write an equation in two variables to model this situation.

Interested in Metal Trades? Click Here

KOIKE ARONSON RANSOME

8.F 4

Problem of the Day: Business Management

The graph below shows the sales (in hundreds) of playgrounds each each year from Bears Playgrounds.

State an interval when sales are increasing

State an interval where the sales decreased.

Interested in business management? Click Here.

8.F 5

Problem of the Day: Construction

Congruent triangles are employed in the building process to strengthen the framework of a structure. This guarantees that the structures are rigid and strong. As a result, they are unaffected by strong winds or other weather-related conditions.

Sketch 3 pairs of congruent triangles below. State the rigid motion that maps one shape to the other. Create a translation, rotation and reflection.

Interested in playground construction?
Click here!

8.G 1

8.G 2.

Problem of the Day: Floor Installation

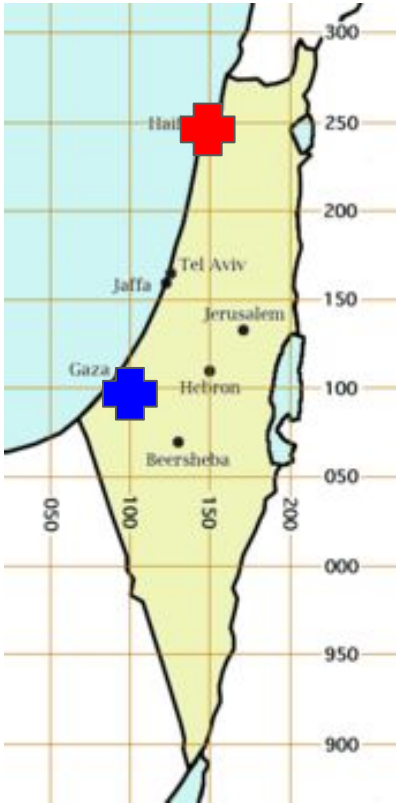
Sketch an example of a tile floor where the shapes are congruent by the following rigid motions:

- Translation
- Reflection
- Rotation

Interested in in Floor Installation? Click Here

8.G 2

Problem of the Day: US Air Force



The US Air Force dropped pallets of aid in Gaza. Describe the transformation that maps the red package to the blue package on the map.

U.S. Air Force, Army airdrop 66 pallets of humanitarian aid to Gaza

Published March 2, 2024

By U.S. Air Forces Central Public Affairs

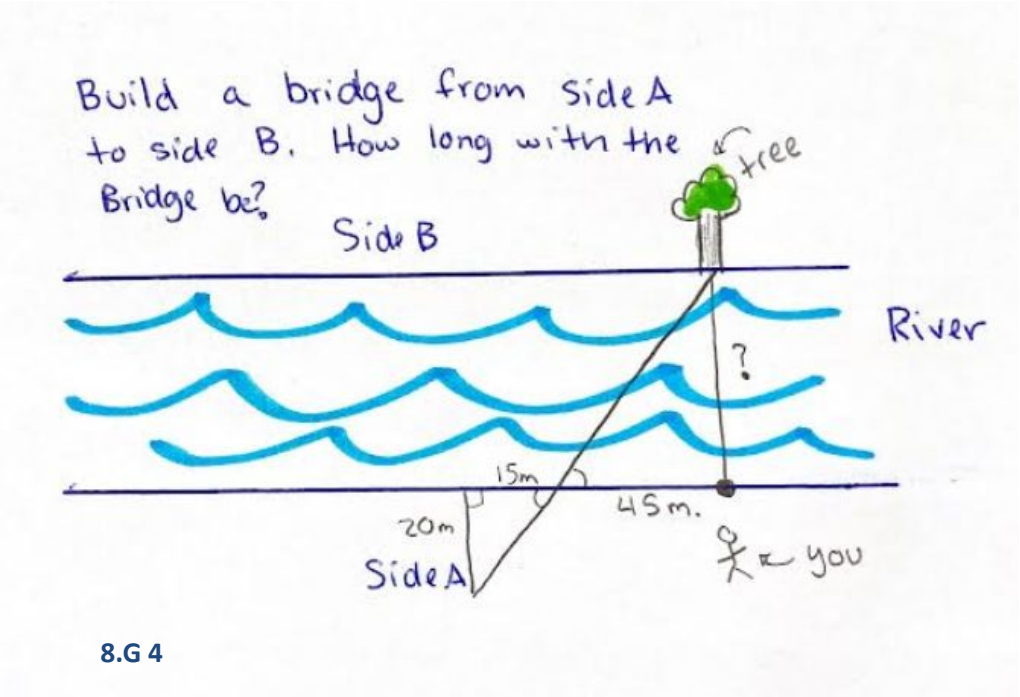
U.S. Air Forces Central Public Affairs

UNDISCLOSED LOCATION, Southwest Asia --

8.G 3

Problem of the Day: Civil Engineering

Before you begin to build a bridge, you need to know the length of the bridge. What is the distance across the river below?



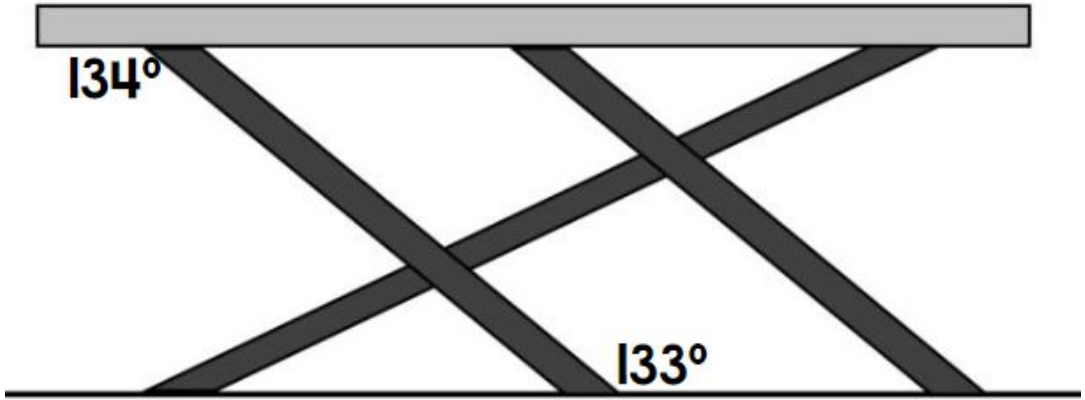
8.G 4

Interested in engineering? Click here!

Video explanation

Problem of the Day Carpentry

Frank is creating a unique table for a new customer. Is this table-top parallel with the floor? How could a construction worker ensure that the top of the table is parallel to the floor?

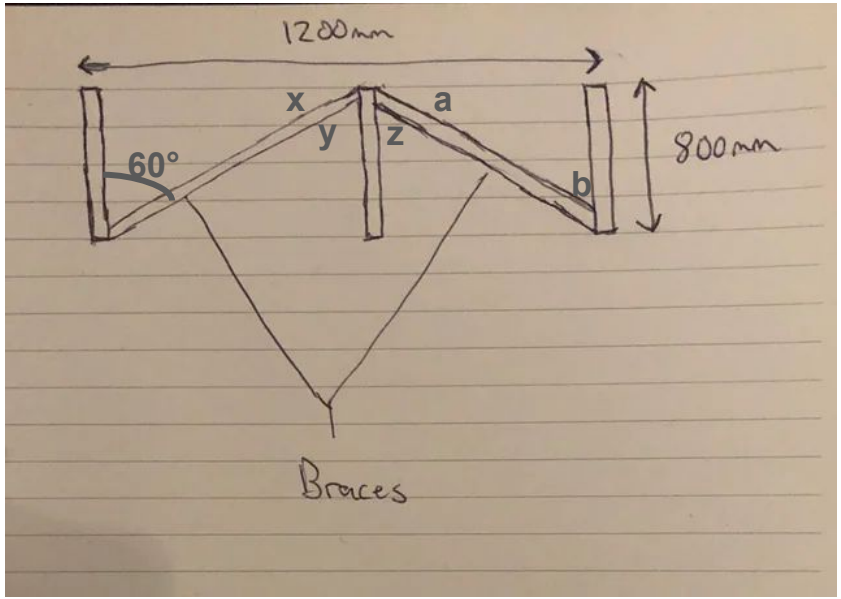


Interested in carpentry Click here!

8.G 5

Problem of the Day: Welders

Welding projects require you to understand, calculate and measure welds at different angles. A welder is creating a brace for shelves.



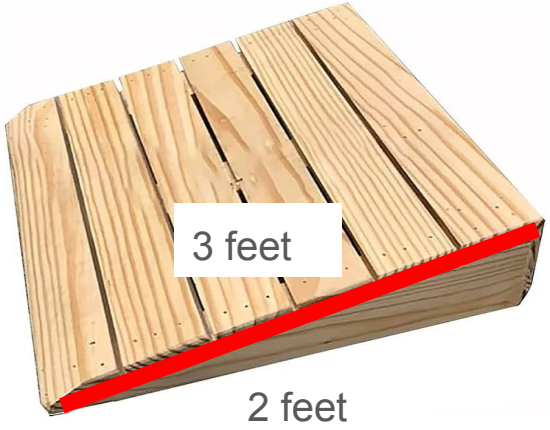
Interested in Welding? Click here!

8.G 5

Power & Construction Group, Inc.

Problem of the Day: Construction

You are building a ramp for a building. Will the dimensions below create a right triangle? Use the converse of the pythagorean theorem to check.

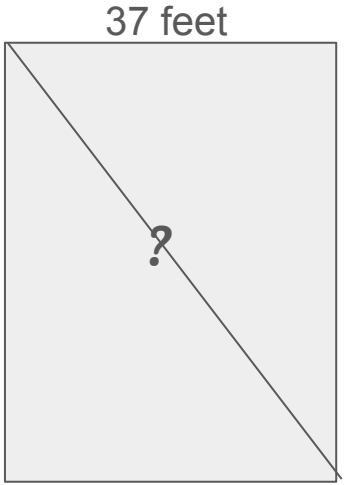


Interested in Construction?
Click Here

Problem of the Day Construction

A construction worker needs to make sure that the corner of a house is a perfect right angle.

What length should this diagonal distance be in order to ensure that the house will have a right angle?



51 feet

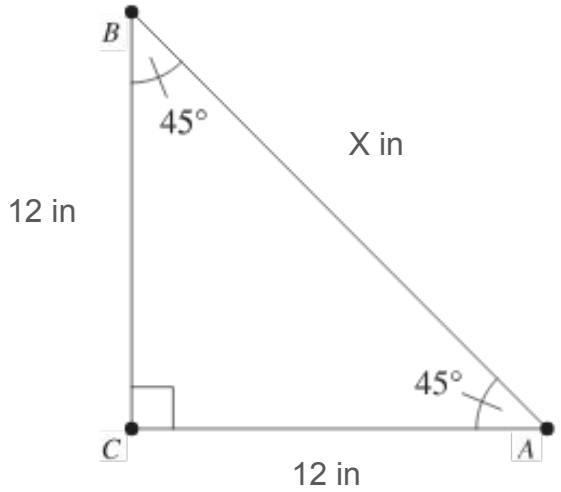
Interested in carpentry? Click here!

Carpenter explains the solution

8.G 7

Problem of the Day: Welding

Use the pythagorean theorem to calculate the missing side. Show your work.



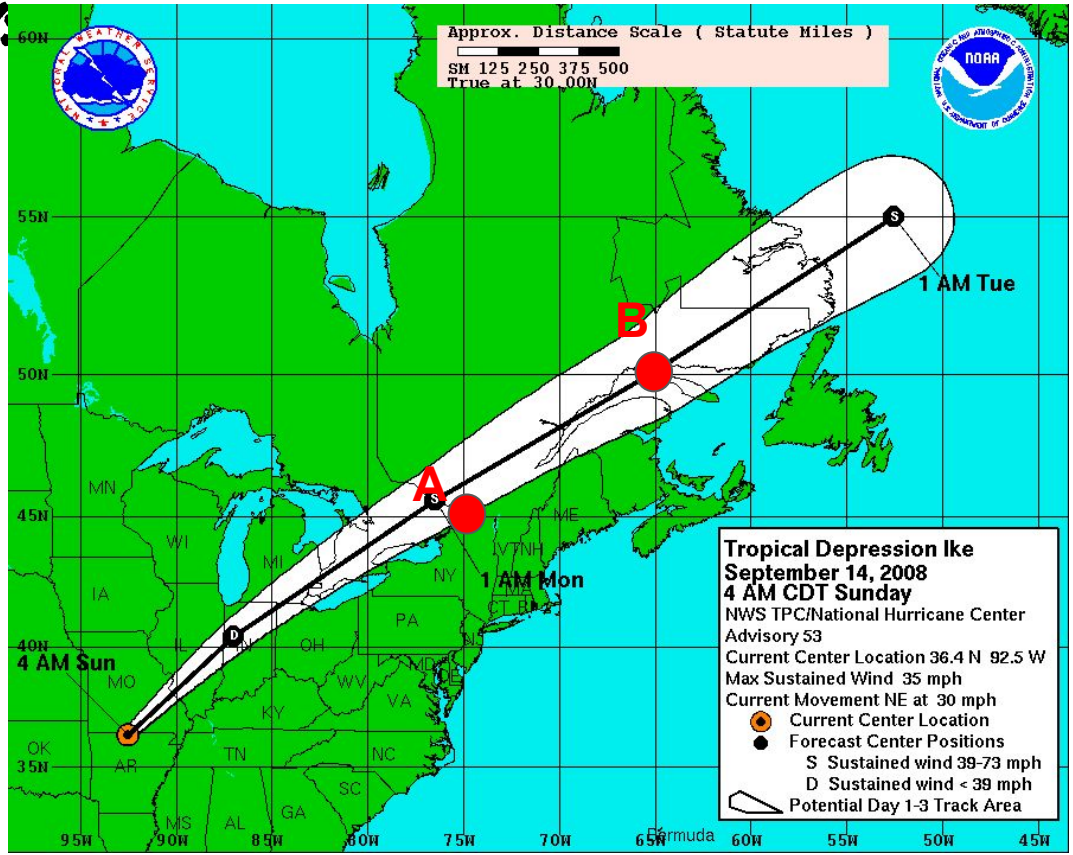
Shop Math Video

Interested in Welding? Click Here

8.G 7

Problem of the Day: Weatherman

Use the pythagorean theorem to calculate the distance between location A and B on the map. The grid lines each represent 400 miles



Interested in Atmospheric Science?
Click Here

8.G 8

Problem of the Day: Plant Operator

The volume of this tank is 750, 000 gallons.

The diameter of the tank is 40 feet.

How tall is the tank?

$$V = \pi r^2 h$$

Volume		
1	=	0.133681
US liquid gallon		Cubic foot

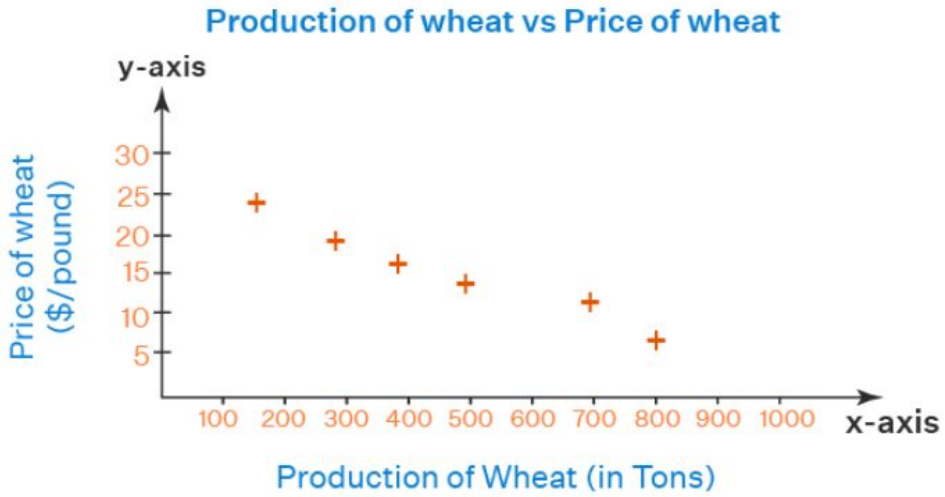
8.G 9

Interested in becoming a plant operator? Click here

TEXAS BRINE COMPANY, LLC

Problem of the Day: Agriculture

Analyse the scatterplot to determine the relationship between production of wheat vs. the cost.



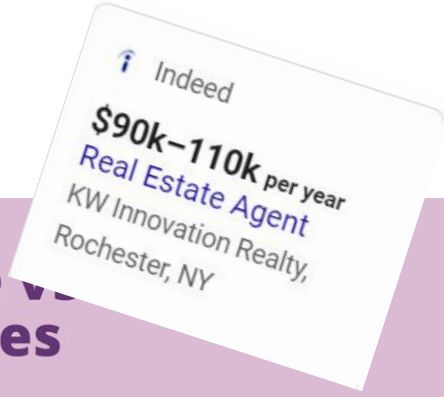
8.SP 1

Interested in Agriculture? Click Here

Problem of the Day: Realtor

Informally fit a line on the scatterplot to answer this question:

If you were a realtor selling a home that was 2,700 square feet, what would be an appropriate price range of the house?



8.SP 2

Interested in Real Estate? Click here

Problem of the Day: Diesel Mechanics

To rent a tractor from White's farm supply, the cost is $100 plus $325 per day.

Write a linear function to represent the cost of renting a tractor. Interpret the slope and y intercept in context of the problem.

The cost of a brand new Kubota tractor is $18,775.

After how many days would it make financial sense to buy the tractor instead of renting it?

WHITE'S FARM SUPPLY, INC.

Interested in Diesel Mechanics? Click here.

8.SP 3

Problem of the Day: Carpentry

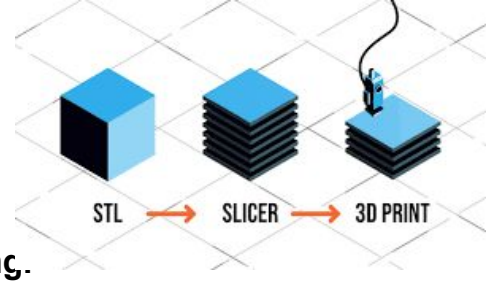
You have 2 pieces of wood that are lengths 10, and 12 feet.

What is the smallest piece of wood that you can cut to make a triangle when you combine it with the other two pieces?

Interested in building trades? Click Here

7.G 2

Problem of the day: Technology



What is Slicing?

The act of converting a 3D model into a set of instructions for the 3D printers is called **Slicing**. Quite literally, it 'slices' the 3D model into thin layers, and further determine how each layer should be printed (the tool path) to get minimum time, best strength, etc.

Sketch a horizontal cut through the center of the following objects. (Cut is parallel to the base.)

7.G 3

Interested in a 3D printing career? Click here

Problem of the Day: Manufacturing

If a cylinder bore is 3.750”, what is the circumference to the nearest hundredth of an inch? (A cylinder bore is the diameter)

$$C = \pi d$$

Prestolite electric

7. G. 4

Problem of the Day: Manufacturing

Find the area of the top of a cylinder with a diameter of 3.250”

- Diameter of top of cylinder is 3.250”
- Looking for Area
- Formula is $A = \pi r^2$ or $A = 0.7854d^2$
- Evaluate formula (substitute know values)

Prestolite electric

Problem of the Day: Military

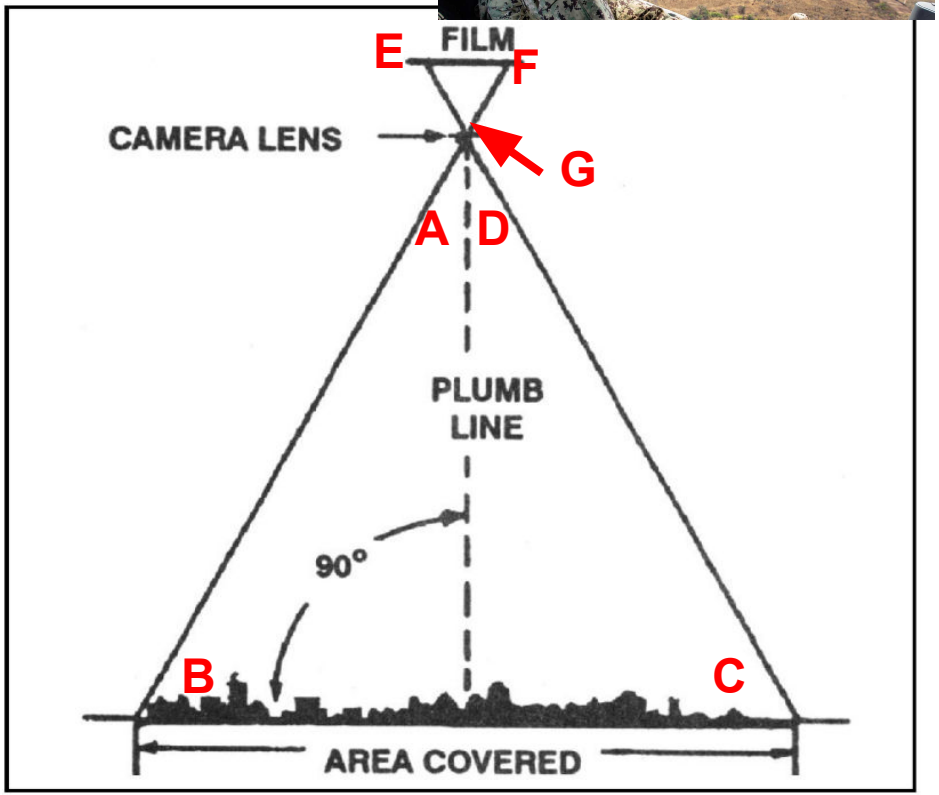
AERIAL PHOTOGRAPHS

An aerial photograph is any photograph taken from an airborne vehicle (aircraft, drones, balloons, satellites, and so forth). The aerial photograph has many uses in military operations

Find all the angle measurements on the diagram.

Figure 8-2. Vertical photograph.

Interested in the military?
Click here.



7.G.5

Problem of the Day: Architecture

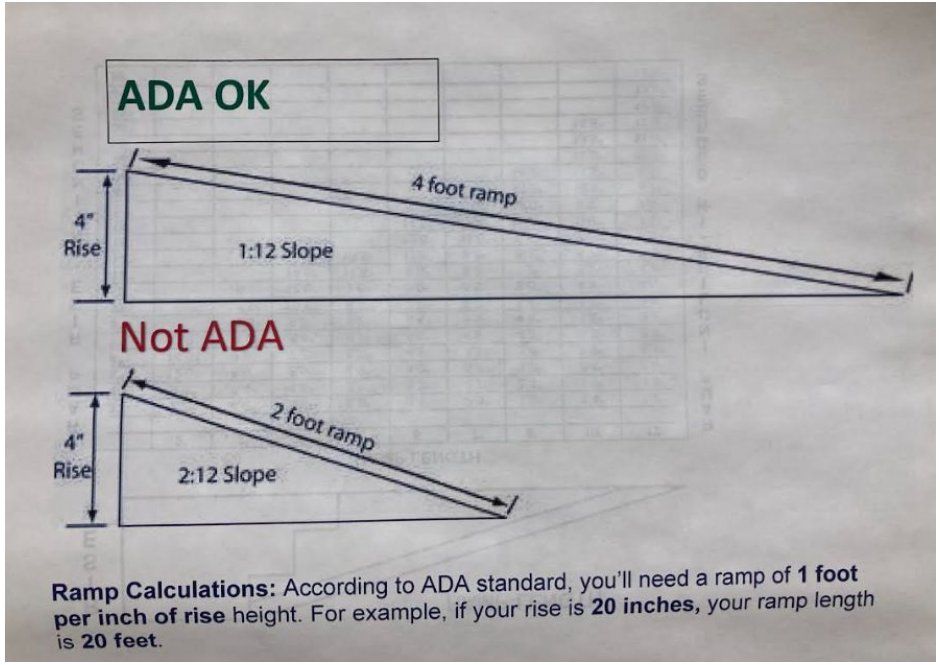
Architecture: Calculate the area of a triangular roof with a base of 10 meters and a height of 5 meters.

7.G 6

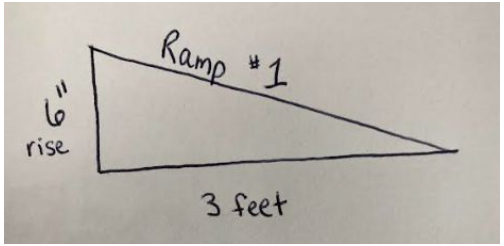
Interested in architecture? Click here

Problem of the Day: Home Health Aide

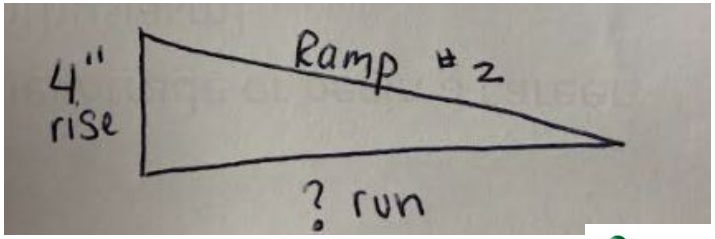
A customer with a broken leg needs a ramp to get into his home. As his health aide, you have to provide a ramp. Below are the standards for a safe ramp.



Does the following ramp have a safe slope?



What is the shortest possible run that would make this ramp safe?



Interested in Home Health Aides? Click Here

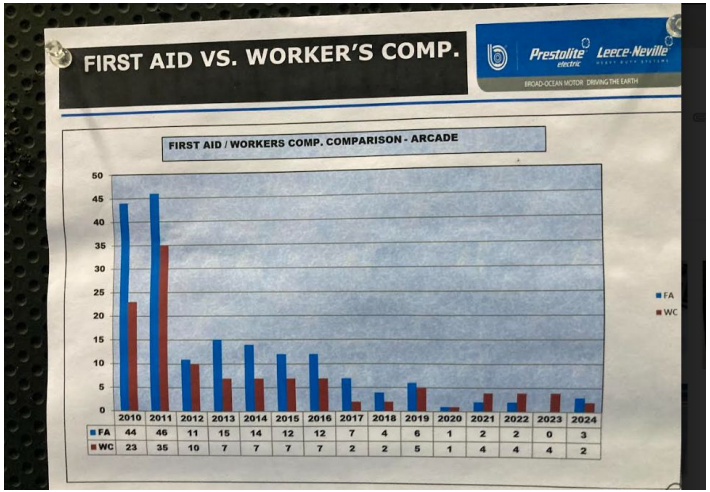
Independent Living of the Genesee Region

Interested in nursing? Click here!

Problem of the Day: Nursing

A patient requires 2 liters of IV fluid over 8 hours. How many milliliters per hour should the IV be set to deliver?

Problem of the Day: Manufacturing



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
FA	44	46	11	15	14	12	12	7	4	6	1	2	2	0	3
WC	23	35	10	7	7	7	7	2	2	5	1	4	4	4	2

Prestolite electric

Problem of the Day: Pharmacy

Convert a prescription for 250 mg of medication to milliliters using the concentration of 50 mg/ml. 9.

Problem of the Day: Logistics

Determine the total distance traveled by a truck that traveled 50 miles at a speed of 60 mph and then traveled 70 miles at a speed of 50 mph.

Problem of the Day: Manufacturing

Mathematics for Manufacturing — Participant POST test Version 1.3

(16) Burrs on the edges of holes punched in metal parts are usually allowed to be no more than 5% of the material thickness.

(a) If you are punching holes in material that is .120" thick, what is the maximum allowable burr?

(b) What if the material is .032" thick?

(17) If you run 4,270 pieces on a press and 162 were rejects, what percent are bad?

Interested in manufactoring? Click here

Problem of the Day: Manufacturing

Working around the clock, the Barilla factory makes 18 metric tons of pasta per hour.

How many 12 oz boxes of Rotini do they make in an entire day?

Common **skills lacking** among job applicants and new employees

Non-Technical Skills (Statewide, All industries)	2021	2022	2023	2024
Self-motivation	64%	70%	61%	61%
Communication skills	66%	52%	56%	61%
Problem-solving/critical thinking	63%	48%	52%	59%
Timeliness/attendance	51%	55%	51%	50%
Attention to detail	58%	50%	46%	49%
Ability to take criticism	40%	31%	27%	41%
Time management	44%	32%	32%	38%
Personal awareness	34%	27%	26%	36%
Teamwork	31%	24%	21%	31%
Conflict management	33%	17%	18%	31%
English skills/grammar	31%	19%	21%	24%
Customer service	24%	19%	20%	21%
Basic math skills	30%	15%	17%	20%