

OAKLAND CUSD #5

TECH MATH

APRIL 20-24, 2020

EMILY MYERS

Week of April 20-24, 2020
Ms. Myers

Hello everyone. Choose 2 of the following activities for the class you are enrolled in to complete for this week. All assignments may be turned in via google classroom. Take a picture or scan it in and turn it into the corresponding assignment. Or you may turn in paper copies to the office and they will get them to me. Both choices are due by Monday, April 13 at noon. Be sure to write whatever choice you are doing at the top of your page.

I will be at my computer for questions on Tuesday 10a-12p, Wednesday 3p-5p & Thursday 12p-2p.

Class	Choice 1	Choice 2	Choice 3	Choice 4	Choice 5
Algebra 2	Water Park Project Show all work!	Page 944 Lesson 1.6 #16-38 Show all work!	Page 945 Lesson 1.7 #7-26 Show all work!	Page 950 Lesson 3.2 Show all work!	Sharing Marbles Show all work!
Algebra 3/Trig	Complete the assignment that was assigned on Khan Academy.	Page 969 Lesson 9.2 Show all work!	Page 968 Lesson 8.7 even Show all work!	Page 968 Lesson 8.8 #1-18 Show all work!	Patterns in Pascal's Triangle Show all work!
Geometry	Geometry Construction Project 1	Page 205 Show all work!	Page 826 Lessons 3.5-3.6 Show all work!	Page 827 Lessons 3.7-3.8 Show all work!	Sharing Marbles Show all work!
Tech Math	Duct Tape/Pencil Pouch Project Show all work!	Integers Wkst Page 93 Show All Work!	Equations Wkst Page 102 Show all work!	Order of Operations Wkst Page 23 Show all work!	Sharing Marbles Show all work!

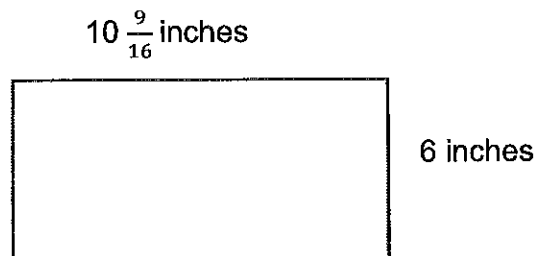
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Tech Math

12. Retailers selling your pencil pouches need to make a profit as well. To assist retailers in pricing please calculate three suggested retail prices including 35%, 45%, and 50% profit.

13. Reflections: Reflect on how this activity relates to real business practices. What other factors not included in this activity might a business consider when making and pricing their goods for sale to retailers?

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1. Your company will create a duct tape pencil pouch using duct tape and a gallon plastic bag. Your bag will have the following dimensions:



Find the area of your bag:

10. The finance manager insists that the company needs to sell the pencil pouches for 85% more than they cost to produce to be profitable. Find 85% of the total cost. **Round to nearest cent.**

11. What is the total price that your company will sell the pencil pouches to retailers for to ensure that you earn an 85% profit on the pencil pouches?

You will be covering both sides of the bag with tape, so what surface area will your bag have?

Choice 1

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7. Regular bags are sold in a box with 38 bags for \$5.09 per box. Slider bags are sold in a box of 30 for \$5.29 per bag. For each type of bag, what is the price per bag? **Round to the nearest cent.**

2. During trial production, you notice some wasted duct tape so you plan for waste during production (overlapped tape, destroyed tape, etc.). Estimates for waste in trial production are 15% of the total surface area per pencil pouch.

Write 15% as a decimal. _____

Find 15% of the total surface area. This is your wasted duct tape per pencil pouch.

8. An employee can make 6 pencil pouches in an hour. Your company pays a minimum wage of \$7.25 per hour. What is the average amount the employee earns per pencil pouch? **Round to nearest cent.**

9. Decide which type of bag to produce. _____
What is the total cost to produce 1 pencil pouch (materials and labor)?

3. Find the total surface area you will cover with duct tape (including predicted waste) per pencil pouch.

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4. If you unroll a roll of duct tape it would be 15 yards x 1.88 inches. There are 3 feet in every yard, and 12 inches in every foot.
- Convert 15 yards into feet.
 - Next convert the answer from above into inches.
 - Now find the area that the roll of duct tape will cover in square inches.
5. A roll of duct tape costs \$5.29 including tax. What is the cost per square inch? **Round to the nearest tenth of a cent.**
6. Using the total surface area of your bag (Step 3) and the cost of duct tape per square inch (Step 5) find the cost to cover your entire bag in duct tape. **Round to the nearest cent.**

Suggested Materials:

- Print pages 1-4 in landscape mode, double side, flip on short edge. (These settings work on my HP LaserJet, you may need to adjust). Fold book in half and staple. Print one per student or group.

-Gallon size plastic storage bags (regular seal and slider seal). Enough for one per student.

-Variety of duct tape (patterns and solid colors)

-Rulers

-Painters tape

-Calculators to check work

-Copy of answer key for teacher or for student self-check

-Scissors

-Heavy duty 3-hole punch

Prerequisite Skills and Knowledge:

Based on working without a calculator this is a list of knowledge and skills students should have before working on this activity.

-Know Area formula for rectangle **Area=Length x Width**

-Converting numbers: fraction/decimal/percent, mixed number/improper fraction

-Rounding to nearest cent, tenth of a cent

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- Find the % of a number

-Unit conversions given conversion factors

-Unit rate/price

-Decimal operation fluency (addition, multiplication, division)

Project timeline:

Depending on skill level of students, without a calculator, this project generally takes students 2 or 3 class periods (50 minutes) to complete.

Lesson Suggestions:

-Begin the project by discussing the startup of a fictitious student business that makes and sells pencil pouches made of duct tape. Invite students to guess how much it would cost to make and how much they should sell for in retail stores. Post guesses in classroom.

-Next I place students into pairs and have them come up with a name for their company and decorate the front cover with their business name and/or logo. I also give small pieces of duct tape if they want to include on cover to get them interested.

-Students complete the word problems practicing skills in computation, area, and percent word problems. I have students compute without a calculator and check with calculator or answer key at each step (to ensure accuracy as many steps build upon previous answers), but those are all teacher decisions. You

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may want to have students compute on scrap paper or on white boards and transfer to booklet when correct.

-Once a pair of students complete all questions correctly I give them a printed sheet with directions to make the pencil pouch (see "How to Make Duct Tape Pencil Pouch" in zip folder). I let students select the type of bag they calculated costs for in the activity. I allow each student to make one pouch.

-If time allows I have had students make extra pencil pouches to donate to our student service center for students needing school supplies.

-If allowed at your school, offer students extra credit or free time to bring in supplies (bags, a roll of duct tape, etc.).

-I allow students one solid color and one pattern when constructing their pouches. No more than $\frac{1}{2}$ the area can be patterned as it is more expensive.

-I have better luck ripping the duct tape than cutting. Scissors get all sticky by end of day. You may need to demonstrate this skill to students.

Integers

Skill: Multiplying and
Dividing Integers

Name _____

Multiply and divide. Show your work on another piece of paper. Write your answers here.

1. $-18 \times -45 + 54 \times -40 + -30$

2. $588 + 14 \times -6 + 21 \times 20 + -8 \times 5$

3. $2,400 + -15 \times -3 + -60 \times 11$

5. $-85 \times -4 + 17 \times -22 + 55 \times 8$

7. $-216 + 18 \times -13 + 2 \times 5 + 39$

9. $81 \times -15 + 27 \times -4 + 60 \times -14$

11. $-270 + -18 \times 16 + -15 \times -22 + -44$

13. $22 \times -55 + 10 \times -36 + 33 \times 4$

15. $-528 + 24 \times -9 + -11 \times 50 + -45$

17. $28 \times -15 + 21 \times -35 + 28 \times -6$

19. $-504 + -42 \times -33 + 2 \times -21 + 77$

21. $72 \times 11 + -12 \times 18 + 4 \times 5 + 33$

23. $156 + -2 \times -5 + 13 \times -7 + -35 \times -6$

25. $33 \times -56 + -77 \times 25 + -300 \times 27 + -18$

27. $2,640 + -22 \times 9 + 24 \times -5 + 15$

29. $-26 \times -20 + 52 \times -9 + 5 \times -7 + -6$

4. $21 \times -2 + -14 \times 25 + -15 \times -9$

6. $-1,584 + 44 \times -21 + 6 \times -5 + -90$

8. $90 \times 35 + 210 \times -8 + 60 \times 17$

10. $540 + -18 \times 16 + 24 \times 11 + -4 \times 6 + -33$

12. $-81 \times 75 + -15 \times -4 + 27 \times -11 + -4$

14. $195 \times -2 + 26 \times -12 + 9 \times -5 + -25$

16. $1,000 + -40 \times 21 + 15 \times -2 + 7$

18. $-210 + -14 \times 21 + -35 \times 16 + -12 \times -5$

20. $-36 \times 25 + -4 \times 7 + -63 \times 3 + 5$

22. $750 + -5 \times 6 + 75 \times 12 + -8 \times 3$

24. $18 \times 28 + 36 \times -110 + 2 \times 3 + 66$

26. $-1,080 + -54 \times 55 + -44 \times 12 + -15$

28. $64 \times -9 + 24 \times 25 + -15 \times 11 + -20$

30. $-360 + -15 \times -35 + -28 \times 40 + -30$

Total Problems 30Problems Correct Percent Correct

Equations

Skill: Systems of Equations

Name _____

Find the ordered pair that is a solution of the systems of equations. To do this, first make and complete an (x, y) table for each equation. Then, draw each equation on the graph given. Where the two lines intersect is the solution.

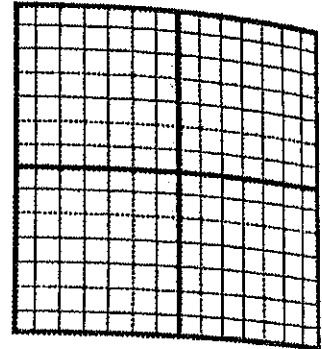
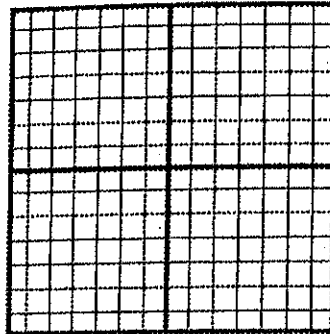
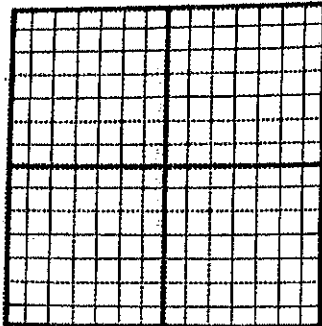
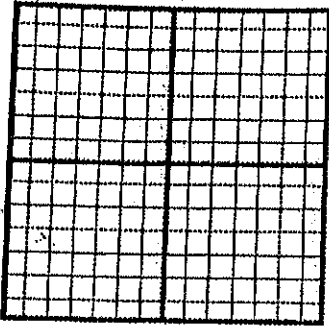
Total Problems 12
 Problems Correct _____
 Percent Correct _____

1. $y - x = 4$
 $y = \frac{x}{-3}$

2. $-11 = x + 2y$
 $3y - 2x = -6$

3. $x - 5y = 14$
 $y = \frac{-x}{2}$

4. $8x + 3y = -15$
 $y = -x$

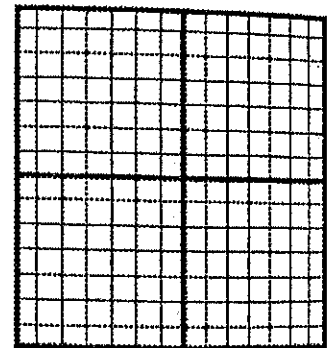
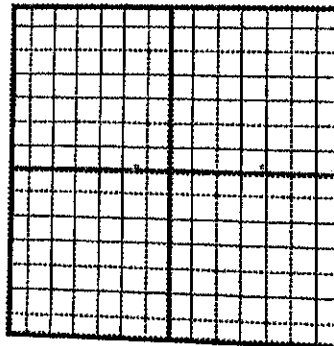
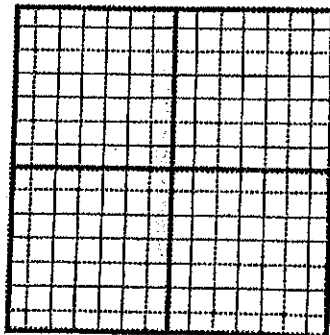
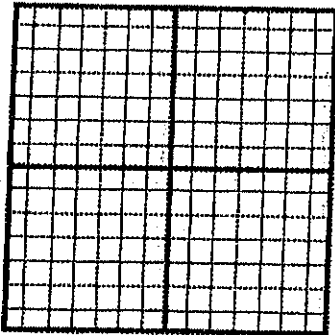


5. $-3y = -21 - x$
 $5x + 2y = -20$

6. $y - 2x = 2$
 $3x = y$

7. $8 = x + y$
 $3y = x$

8. $x + 4y = 12$
 $y = \frac{x}{2}$

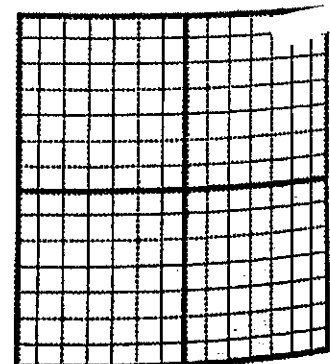
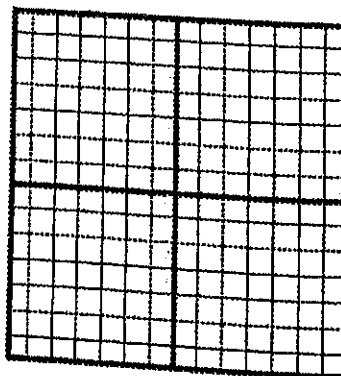
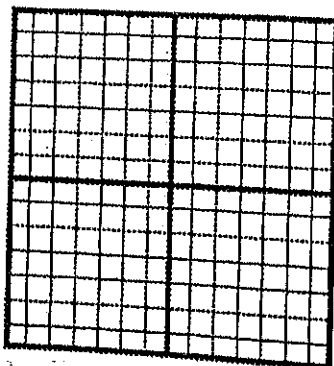
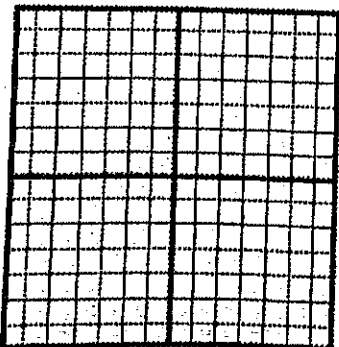


9. $2 = 3x + y$
 $y = -5x$

10. $4x - 2y = 4$
 $3x = y$

11. $3y + x = 7$
 $2x = y$

12. $2x + y = -7$
 $-3y = x + 11$



Name _____

Show your work on another piece of paper.
 Write your answers here.

Total Problems	<u>24</u>
Problems Correct	_____
Percent Correct	_____

1. $63 + \sqrt{81} \times \sqrt[3]{27} + 44 + \sqrt{121}$ _____
2. $(3^2 + \sqrt{4})^2 - 5 \times \sqrt{36} + (3^3 + \sqrt{16})$ _____
3. $(28 - 13) \times (\sqrt{4} \times \sqrt{100}) + (\sqrt{36} \times \sqrt[3]{8})$ _____
4. $26 + 5 \times 6 - 75 + 15 \times 11 + \sqrt{64} \times 13$ _____
5. $125 + \sqrt{25} + (72 + 2^3)^2 - \sqrt{49} \times 13$ _____
6. $(117 + 13)^2 - 4^3 + (\sqrt{9} + \sqrt[5]{32})^2$ _____
7. $\sqrt{9} (80 + 4^2 \times 15 + 24 - 80) + \sqrt{169}$ _____
8. $\sqrt{(55 + \sqrt{121}) \times (15^2 + 5^2) + (\sqrt{9} \times \sqrt{16} + \sqrt{49})}$ _____
9. $(13 \times 5 + 15 \times 13 + 13 \times 2 + 8^2) + 7 \times 2^2 - 10^2$ _____
10. $\sqrt{49} \times 2^3 + \sqrt{25} (238 + 14 - \sqrt{36})$ _____
11. $\frac{\sqrt{5^2 + 2^2} \times 6 + \sqrt{121} \times 2 \times 23 + \sqrt{49} \times 3^2}{8}$ _____
12. $(33 - 27)^2 + \sqrt{144} \times (42 - 38 + 6)^2$ _____
13. $240 + (10 + 2) \times (8 - 5) \times 3 + 5$ _____
14. $(240 + 10 + 2 \times 8 - 5 \times 3) + 5$ _____
15. $10^2 + \sqrt{121} \times \sqrt{81} - 80 + 5 + (45 - 33)^2 - \sqrt{169} \times \sqrt{225} + 9 (135 + 3^3)$ _____
16. $(75 + 3) \times (72 + 12) \times \sqrt[3]{256} + \sqrt{400} \times (\sqrt{121} - \sqrt{16}) \times (\sqrt{144} + \sqrt{36}) + \sqrt[3]{27}$ _____
17. $\sqrt{100} (50 + \sqrt{25} \times 6 + 15 \times 1^5 \times \sqrt[3]{216}) + (13^2 - 11 \times 12 + 84 + 14 - 5^2 - \sqrt[4]{16})$ _____
18. $(75 + 5 + 16 \times 3) - (10^2 - 93)^2 + 8 \times 3^2 + \sqrt{36} \times 2^3 - 11 \times \sqrt{25}$ _____
19. $5,600 + (\sqrt{49} \times \sqrt{36} + \sqrt[3]{27} \times \sqrt[3]{125}) - 24 \times 30 + 36 \times 5 + 4 - 11 (4 \times \sqrt[3]{1000} + \sqrt{64})$ _____
20. $120 + \sqrt{100} + 14 \times 2^2 - 2^4 \times \sqrt{9} + 6^3 + 2^2 - (\sqrt{121} + \sqrt{144}) + (4 - 3 + 6)^2$ _____
21. $10^2 \times \sqrt[3]{27} + \sqrt[6]{64} + 50 \times \sqrt{49} \times \sqrt{100} + (2^5 - 5^2 - 1^4)$ _____
22. $(2 \times \sqrt[3]{27})^2 \times \sqrt{100} + \sqrt{81} \times \sqrt{36} + 2^3 + \sqrt[3]{1000} \times \sqrt[4]{625}$ _____
23. $(\sqrt{100} \times \sqrt{25} - \sqrt[3]{27} \times \sqrt{36}) + \sqrt[6]{64} \times \sqrt[4]{81} + 2^3 \times \sqrt{121} + 33 \times 50 + 5^2$ _____
24. $(\sqrt{169} + 3^2) \times (\sqrt{36} - 1^4) \times (12^2 - 142) \times (\sqrt{16} - 1^6) \times (9^2 - 78) + (4^2 + \sqrt{100} - \sqrt{81} - \sqrt[3]{216})$ _____

Sharing Marbles

Choice 5

Some math problems have one answer, some have many answers, and some have no answer! Find as many answers as you can to these problems and show how you figured them out. If a problem does not have an answer, explain why.

Pablo has some marbles in a bag. He wants to share all of them equally with his friends.

1. Pablo has fewer than 30 marbles in his bag.

He shares them between 3 friends and there is one marble left. He shares them between 4 friends, and there is one marble left.

How many marbles were in the bag?

2. Pablo has fewer than 50 marbles in his bag.

He shares them between 3 friends and there is one marble left. He shares them between 4 friends, and there is one marble left. He shares them between 5 friends, and there are no marbles left.

How many marbles were in the bag?

3. Pablo has fewer than 100 marbles in his bag.

He shares them between 3 friends and there is one marble left. He shares them between 4 friends, and there is one marble left. He shares them between 5 friends, and there is one marble left. He shares them between 6 friends, and there are no marbles left.

How many marbles were in the bag?

4. Pablo has many marbles in his bag.

He shares them between 3 friends and there is one marble left. He shares them between 4 friends, and there is one marble left. He shares them between 5 friends, and there is one marble left. He shares them between 6 friends, and there is one marble left. He shares them between 7 friends, and there are no marbles left.

How many marbles were in the bag?

5. Create your own problem about sharing marbles. Then solve it!