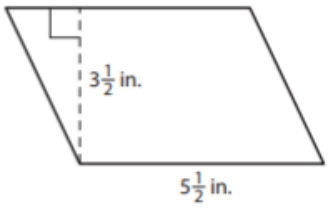
Name: _____ Date:_____

Ms. Streffacio Class: _____

Summer Math Work

Due: First day of school

1. A tile for a mosaic is shaped like the parallelogram shown. Find the area that is covered by 1 tile. Explain.



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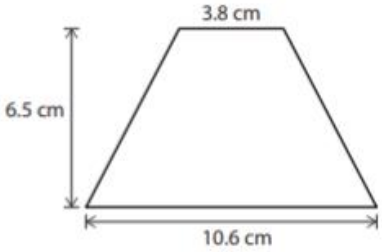
2. Refer to the trapezoid at the right. Describe how you can find the area of the trapezoid. Sketch the figures you would use to find the area on the trapezoid at the right.



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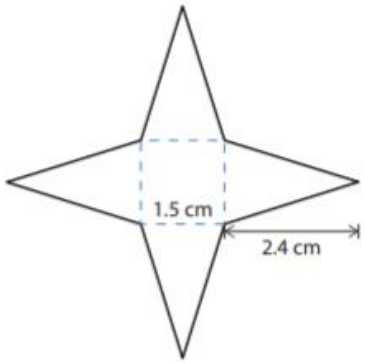
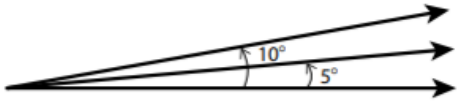
3. Vasco needs to know the area of the four-pointed star shown for an art project. He knows that all of the triangular "points" are identical. What is the area of the star?

Show your work.



Solution: _____

4. A wheelchair ramp for a business cannot be steeper than 5°. A similar ramp for a home can be 10°. What is the difference in degrees of these two ramps? Explain.



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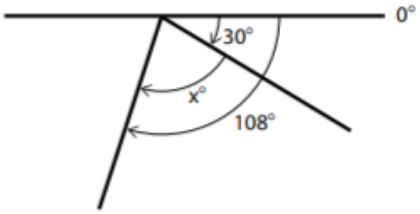
5. Randi had surgery on her knee. Right after the surgery, she could bend her knee only 30° from a horizontal position. After six weeks of physical therapy, she can bend it 108°. How many more degrees can she move her knee after therapy? Explain.



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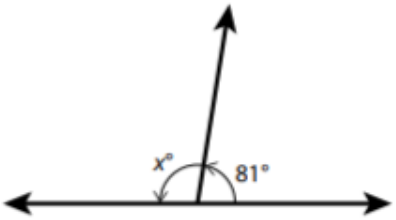
6. Mario places a laptop on a desk. He adjusted the screen so that the screen is at an angle of 81° with the desk. What is the measure of the unknown angle? Explain.

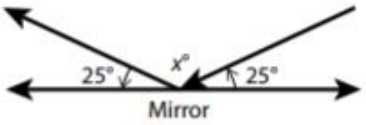
Show your work.



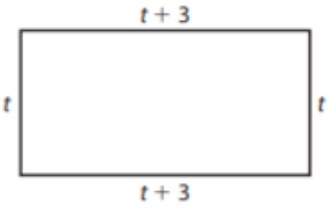
Solution: _____

7. Mansi shines a beam of light on a mirror. The angle between the beam and the mirror is 25°. The beam reflects off the mirror at an angle of 25°. Find the measure of the unknown angle.

Show your work.



8. The lengths of the sides of a rectangle are shown. Write two equivalent expressions for the perimeter of the rectangle.



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_____

9. Write two different expressions that are equivalent to $12 - 16x$. Use factoring to write one of the expressions.

_____

_____

10. Describe how to determine whether $18 - 3(2p + 4) - 3p$ is equivalent to $3(2 - 3p)$. Are the expressions equivalent?

11. Tran says that $-\frac{1}{4}x - 7 + \frac{9}{4}x + 2x$ is equivalent to $4x - 7$. How can substituting any value for x help you determine whether Tran is correct? Is Tran correct? Use substitution to justify your answer.

12. The perimeter of a square can be represented by the expression $8x - 10 + 8x - 10$. Write an expression to represent the length of one side of the square.

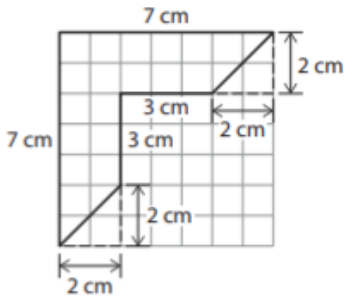
Show your work.

Solution:

13. Trey solved the equation $\frac{1}{4}(8x + 16) = 4x$, as shown at the right. Describe the error that he made. Then solve the problem.

$$\frac{1}{4}(8x + 16) = 4x$$
$$2x + 16 = 4x$$
$$\frac{16}{2} = \frac{2x}{2}$$
$$8 = x$$

14. Refer to the figure at the right.



a. Show how you can divide the figure at the right into polygons whose areas you know how to find.

b. Sketch each kind of figure and label its dimensions.

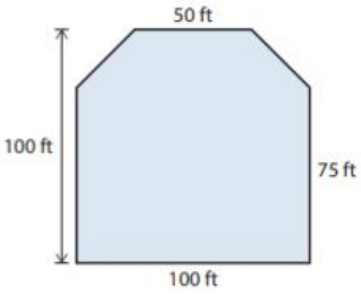
c. Find the total area of the figure.

Show your work.

15. Describe the first step you would use to solve the equation $20 = 7y + 2 - y$. Is that the only possible first step?

16. A side of a barn has the shape shown. Use subtraction to find the area of the side of the barn. Draw any lines on the diagram that will help explain your work.

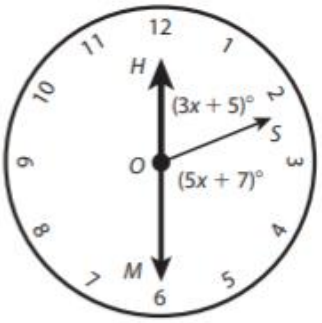
Show your work.



Solution: _____

17. The hour and minute hands on the clock shown form a straight line. The location of the second hand on the clock is also shown on the diagram. Find the measures, in degrees, of angle *HOS* and angle *MOS*.

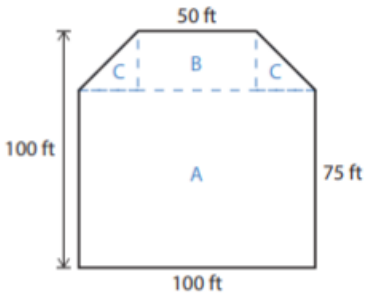
Show your work.



Solution: _____

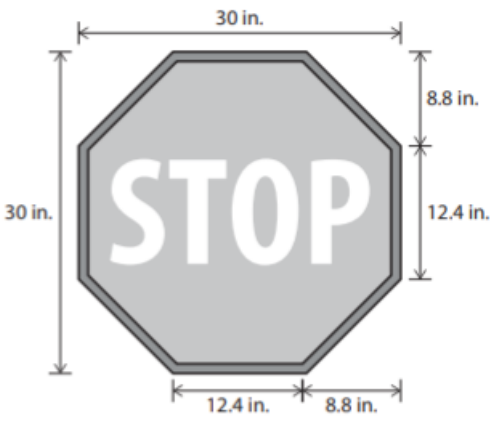
18. Jasmine solved problem 5 using the diagram at the right. She says that an expression for the total area is $(100)(75) + (50)(25) + \frac{1}{2}(25)(25)$. Do you agree? If so, show that her expression is equivalent to the one you found in problem 5. If you disagree, explain her error.

Show your work.



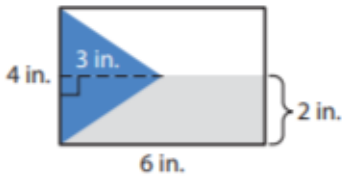
19. Find the area of the STOP sign using subtraction. Draw any lines needed on the diagram and explain your thinking.

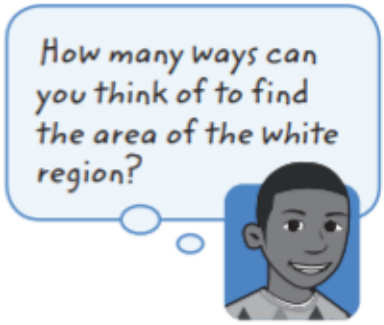
Show your work.



Solution: _____

20. The dimensions of a small flag are shown. Which of the following expressions does NOT represent the area of the region shown in white?





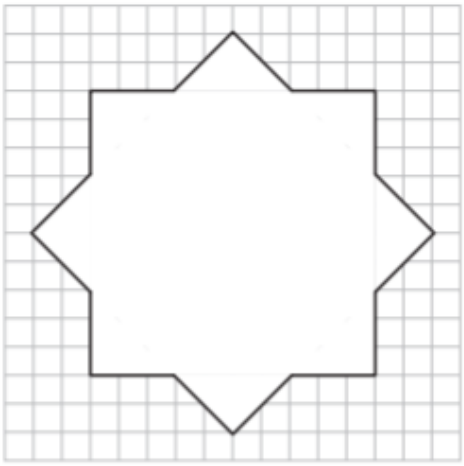
A $(2)(6) - \frac{1}{2}(2)(3)$

B $(4)(6) - \frac{1}{2}(4)(3) - 2(3) - \frac{1}{2}(3)(2)$

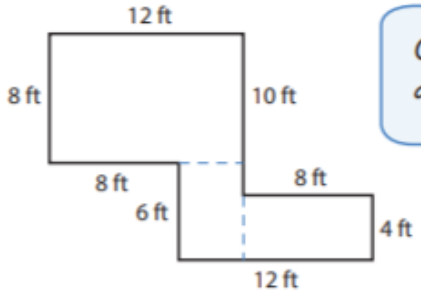
C $(3)(2) + \frac{1}{2}(3)(2)$

D $(6)(2) + \frac{1}{2}(3)(4)$

21. Perry drew this design on graph paper. He says that because the design is made of 2 identical squares he can find the area of his design by multiplying the area of one square by 2. Do you agree? If so, explain why. If not, explain Perry's error. Draw lines on the design to show your thinking.



22. Abe plans to lay tiles on the areas shown. A case of tiles costs $40 and covers 15 square feet. How much does Abe need to budget for the tiles?



A $360 **C** $440

B $400 **D** $480

Claire chose **B** for the answer. What did she do wrong?

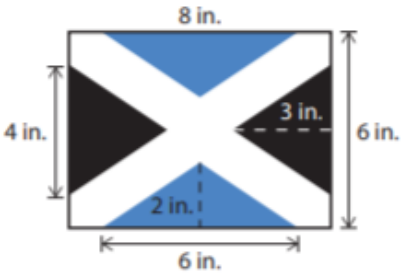
Solution: _____

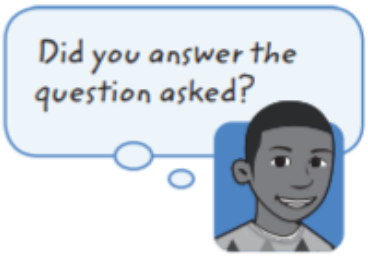
23. Solve the equation in two different ways: $6p = 0.6(5p + 15)$.

Show your work.

24. What percent of the total area of the flag is white?

Show your work.

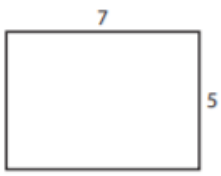




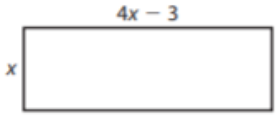
Solution: _____

25. The two rectangles shown below have the same perimeter. Write and solve an equation to find the value of x. Then find the measures of the length and width of Rectangle B. All measurements are in inches.

Rectangle A



Rectangle B



Equation: _____

$x =$ _____

Length of Rectangle B: _____

Width of Rectangle B: _____

26. Claire wants to solve the equation $-\frac{1}{4}(x - 1) = \frac{2}{3}x + 2$.

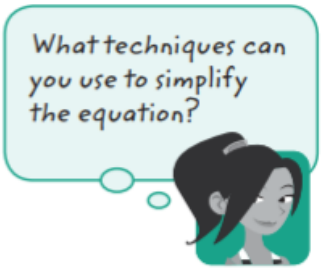
Which step would not be an appropriate first step for Claire to take to solve for x?

A Multiply both sides by -4.

B Use the distributive property to distribute $-\frac{1}{4}$.

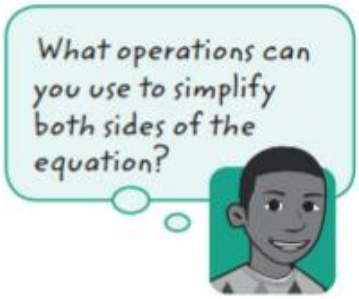
C Add 1 to both sides.

D Multiply both sides by $\frac{3}{2}$.



27. Solve the equation for x: $3x - 5 = \frac{1}{2}x + 2x$.

Show your work.



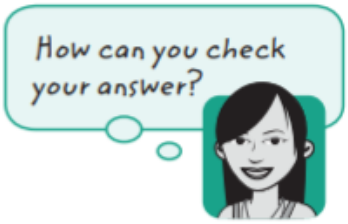
28. In the equation below, for what value of c does $x = 4$?

$\frac{1}{2}(2x + 4) = 3x - c$

A -6 **C** 3

B -3 **D** 6

Jenn chose **C** as the correct answer. How did she get that answer?



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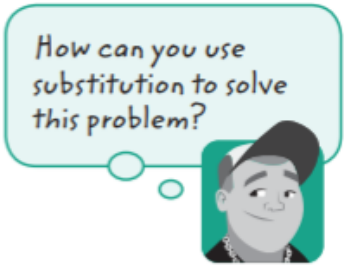
29. Choose *Yes* or *No* to tell whether the equation has the given solution.

a.	$2x + 4 = 3x - 2; x = 6$	☐ Yes	☐ No
b.	$\frac{1}{4}x + 3 = \frac{3}{4}x + 1; x = 8$	☐ Yes	☐ No
c.	$3x - 5 = 0.5x; x = 2$	☐ Yes	☐ No
d.	$\frac{2}{3}(3x + 6) = 3x - 4; x = 8$	☐ Yes	☐ No

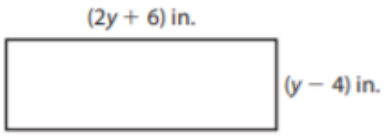


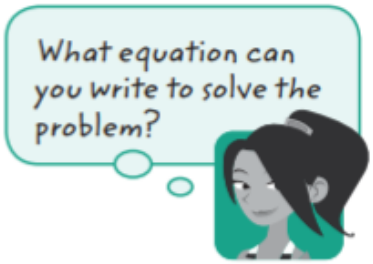
30. Nien has a flower farm. He cuts $4\frac{3}{4}$ square yards of flowers one day and $5\frac{2}{3}$ square yards of flowers the next. Use addition to find the total change in the square yards of flowers.

Show your work.

Solution: _____

31. The width of this rectangle is $\frac{1}{3}$ of the length. Find the length and the width of the rectangle.





Show your work.

32. Carl has a new bottle of laundry detergent. He uses 0.4 cup of laundry detergent while washing one load of laundry and 0.7 cup on another load. Use addition to find the total change in the number of cups of detergent in the bottle.

_____

33. What is the sum $-7\frac{1}{6} + 3\frac{5}{6}$ in simplest terms?

Show your work.

Solution: _____

34. At a recycling center, items are sorted and removed according to the material they are made out of. In one mixture of recycled materials, 2.625 tons of metal cans, 5.58 tons of paper, and some glass items are removed. If the total change in weight of the recycled materials is −9.5 tons, how many tons of glass were removed?

Show your work.

Solution: _____

35. Ana hikes at a constant speed. She travels 6 miles in 2 hours.

a. Find her speed in miles per hour. Use it to write an equation for the distance, d, that Ana travels in h hours.

_____

b. Use the equation to find the distance Ana travels in 1.5 hours.

_____

36. The table shows the number of gallons of water, g, that a water pump transfers in s seconds. How many gallons of water are pumped per second? What is an equation for the gallons of water, g, that the station can pump in s seconds?

Seconds, s	12	16	20
Gallons Pumped, g	9	12	15

Show your work.

Solution: _____

_____

37. Joleen and Pablo want to fertilize a rectangular garden with an area of A square feet. They know that 5 cups of fertilizer will cover an area of 240 square feet. They each write an equation to represent the relationship between the area, A, and the number of cups of fertilizer, c.

Joleen's equation: $A = 48c$

Pablo's equation: $c = \frac{1}{48}A$

Which of the equations is correct? Explain how you know.

_____

_____

_____

38. Miguel deposits $680 in an account that pays 3.5% simple interest. If he neither adds more money nor withdraws any money, what amount will be in the account after 6 years?

Show your work.

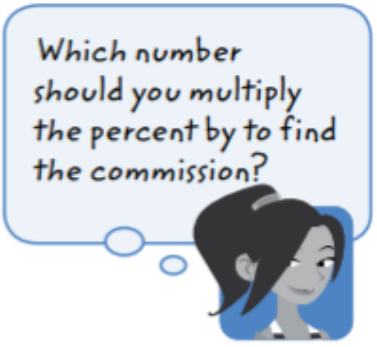
Solution: _____

39. You buy a calculator for $65. A 6% sales tax is added. Write and solve an equation to find the total price, *t*.

_____

40. Cara earns a base pay of $1,800 per month at a car dealership plus a commission of 6% of her sales. What are Cara's total earnings in a month in which she sells $40,000 worth of merchandise?

Show your work.



Solution: _____

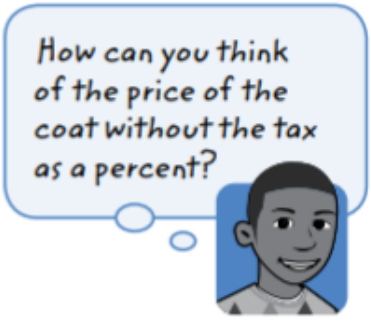
41. Roy buys a coat for $86.40, which includes an 8% sales tax. Which equation could you use to find the cost of the coat, *c*, without the sales tax? Select all that apply.

A $0.92 \times 86.40 = c$

B $c + 0.08c = 86.40$

C $0.92c = 86.40$

D $1.08c = 86.40$



42. Arlene sells computers and tablets. She earns an 8% commission on every dollar of sales that she makes. In one month she earned a total of $2,560 in commissions. Write an equation for Arlene's sales, s, in dollars that month. Then find her sales.

Show your work.

Solution: _____

_____

43. A store advertises a sale as "Get 30% off your highest priced item when you buy 2 or more items." Lee buys items with prices of $30 and $20. Find the percent of discount on the total purchase. Explain your answer.

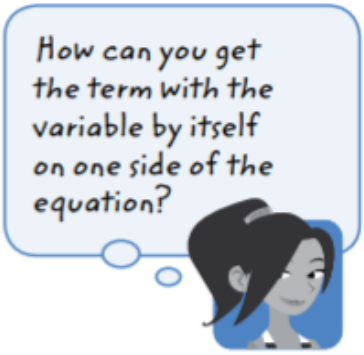
_____

_____

_____

44. Kia buys a shirt that costs $12.50 and some pairs of socks that are $2.50 each. She pays a total of $27.50. How many pairs of socks did Kia buy?

Show your work.



Solution: _____