

Block: _____

1. Perform the following integer operations:

$(3) \times (-4)$	$(-5) \times (-11)$	$(-13) \times (2)$
$(-56) \div (-7)$	$(-96) \div (12)$	$(54) \div (-18)$
$(-5) + (-2)$	$(-9) + (8)$	$(4) + (-1)$
$(-7) - (2)$	$(4) - (-3)$	$(-6) - (5)$

$(3) - (-4) \times (5)$	$(-30) \div (6 - (-4))$
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3. A skydiver is dropping down from the sky at a rate of 9 metres per second. How far has he fallen after 7 seconds?
4. The temperature at 9pm was +3, and dropped at a steady rate of 2 degrees per hour. What was the temperature at 4 am?

Operations with Fractions

5. Solve. Show all your work. Reduce answers to lowest terms.

$$1\frac{2}{3} - \frac{3}{4}$$

$$\frac{4}{5} + \frac{9}{10}$$

$$\frac{2}{5} \times \frac{1}{6}$$

$$2\frac{1}{3} \times \frac{2}{3}$$

$$\frac{5}{6} \div \frac{1}{3}$$

$$\frac{2}{9} \div 1\frac{1}{2}$$

$\frac{5}{6} + \frac{2}{3} \times \frac{2}{5}$	$\frac{1}{5} \div \left(\frac{4}{6} - \frac{2}{3} \right)$
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Proportional Reasoning

6. Write each ratio as an exact count and then reduce to lowest terms:
 - a. 3 blue cars to 6 red cars to 12 silver cars (blue to red to silver)
 - b. A 15 cm tall tomato plant to a 25 cm tall pea plant (pea to tomato)
 - c. 7 cupcakes to 14 cakes (cakes to all baked goods)
7. Write each rate. Then simplify to a unit rate.
 - a. The pilot flew 600 km in 60 minutes.
 - b. The total cost for 40 colouring markers is \$16.

8. Find the Best Buy for each situation:

a. \$4.99 for 8 hot dogs OR \$6.55 for 12 hot dogs

b. \$3.50 for 25 pencils OR \$4.25 for 35 pencils

9. Find the missing value for each proportion. Round to one decimal place if needed.

$\frac{2}{4} = \frac{\square}{2}$	$\frac{1}{10} = \frac{10}{\square}$	$\frac{16}{\square} = \frac{4}{5}$
$\frac{\square}{14} = \frac{15}{42}$	$\frac{30}{40} = \frac{s}{120}$	$\frac{64}{8} = \frac{y}{2}$

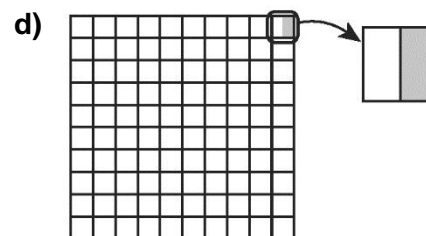
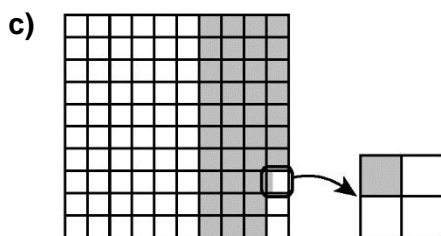
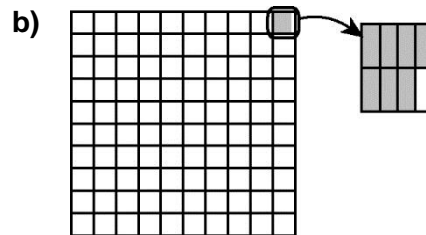
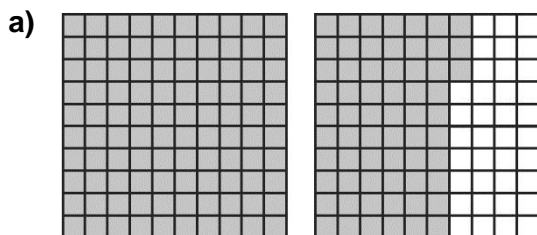
10. Use a proportion to solve.

- a. The ratio of boys to girls at a music concert was 3 to 5. If there were 140 girls, how many boys were at the concert?

- b. Three cups of flour are needed to make 48 pecan cookies. How many cookies will 5 cups of flour make?

Percent

11. One completely shaded grid represents 100%. What percent does each diagram represent?



12. Solve.

a. *Percent* means out of 100, so $3\% = \frac{3}{\square}$.

b. Complete the table

Fraction	Decimal	Percent
$\frac{3}{8}$		
$\frac{2}{25}$		
	0.625	
		135%
		5.5%

13. Determine the percent OF each number.

a. 35% of 680

b. 12.5% of 44

c. 8.5% of 900

14. IF the sales tax in the province changes to $6\frac{1}{2}\%$, what is the tax you would pay on a pair of shoes that cost \$82? What is the total cost of your new shoes?

15. A DVD regularly costs \$22.25. It's on sale for 40% off. What is the sale price?

16. A winter coat costs \$155.99. It is on sale for 25% off. Today only, you get to take an additional 15% off the SALE PRICE. What is the cost of the coat before taxes?

Expressions

17. Translate each phrase into a mathematical expression:

- a. 3 less than twice a number
- b. The square of a number added to 8
- c. Half of a number
- d. Seven times a number and ten times a second number

18. Substitute the given values into each expression then simplify:

$3x + 5$ $x = -2$	$4y - 18$ $y = 3$
$22 - 4x$ $x = -10$	$5x - 3y$ $x = -4, y = -1$

Two-Step Equations

19. Use the distributive law to expand each expression.

- a. $6(x - 4)$
- b. $-9(2y - 10)$
- c. $4(5x - 7y)$

20. Solve each equation by using the opposite operation. SHOW ALL YOUR WORK.
Check your answer in the space provided.

$2x + 5 = 9$	$2 + \frac{a}{-8} = 4$
$-2f - 3 = 11$	$4x + 10 = 34$
$8 + \frac{x}{12} = 7$	$42 = 7(y + 4)$
$-18 = 6(j - 5)$	$-4 + \frac{x}{11} = -1$

21. Use algebra to solve:

- a. Half of Claire's age added to 2 equals the age of her sister, Ayda, who is 11. How old is Claire?

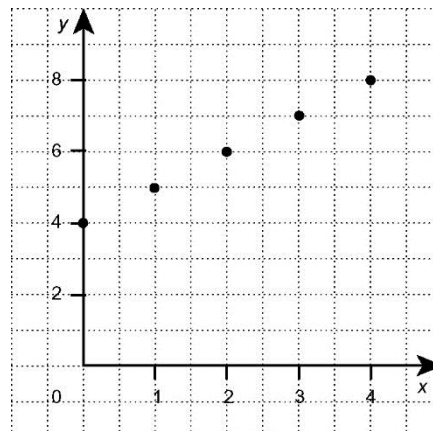
- b. If you take the number of points the Panthers football team scored in their first game, add the 21 points they scored in their second game, and double the total, you will get 62 total points. How many points did they score in their first game?

Discrete Linear Relations

22. What is the equation that describes the pattern shown in the table?

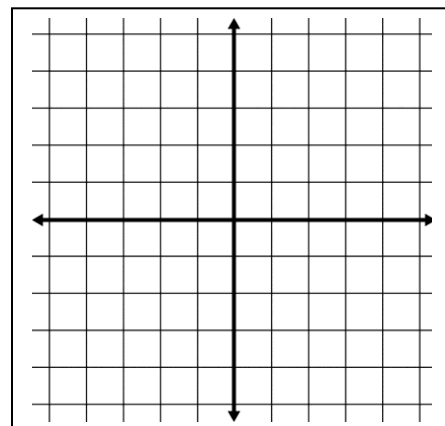
Tires (t)	Lug Nuts (n)
1	5
2	10
3	15
4	20

23. Create a table of values using the data points on the graph.



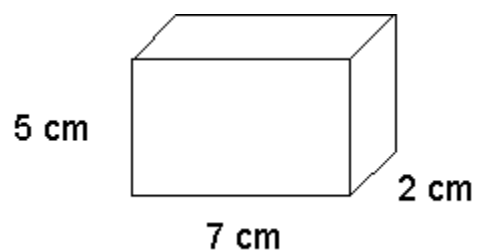
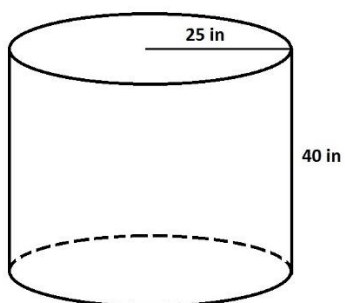
24. Complete the table of values for the equation $y = 2x - 3$ then graph the points.

X	Y
0	
1	
2	
3	

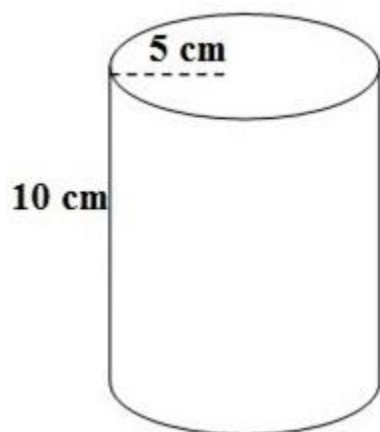


Surface Area and Volume – All formulas will be provided

25. Find the **surface area and volume** of each shape shown below.



26. If the cylinder below is $\frac{3}{4}$ full, calculate how much water it can hold.



Square and Cube Roots

27. Circle all the perfect squares in the list below:

44 64 77 81 22 24 25 121 500 1000 100 200 225

28. Circle all the perfect cubes in the list below:

100 45 27 81 64 200 125

29. Find the square root of each number:

36 81 256 500 900

30. Find the cube root of each number:

64 729 1000 300 19

31. Write in expanded form. Calculate the square of each number:

17^2

33^2

20^2

32. Write in expanded form. Calculate the cube of each number:

25^3

11^3

50^3

33. Find the area of a square with a side length of 15 cm.

34. Find the side length of a square with an area of 6400 cm^2 .

35. Find the volume of a cube with a side length of 3 mm.

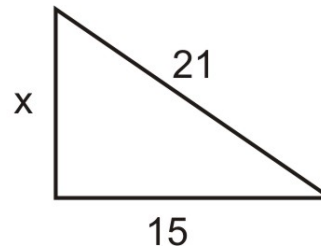
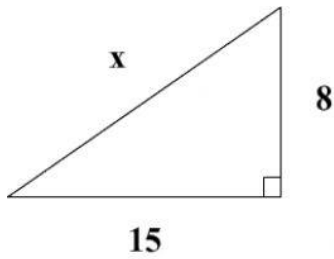
36. Find the side length of a cube with a volume of 125 m^3 .

Pythagorean Theorem

37. Draw a right angle triangle. Label the three sides with a, b, c.

- a. What is the longest side called?
- b. What are the other two sides called?

38. Find the missing side length, X , for each triangle:



39. A rectangular field measures 80 m by 100 meters. What is the length of the diagonal of the field?

Central Tendency

40. Find the mean, median and mode for each set of numbers:

a. 5, 6, 7, 8, 5, 6, 4, 7, 5, 8

b. -12, -14, -9, -4, -8, -7, -10, -12

41. What is an outlier?

42. What measure of central tendency would be the best choice if you were looking at shoe sizes?

