DAY 1 - Solve ONE and TWO Step Equations

1. $12 = 3x$

2. $x + 5 = 11$

3. $y - 3 = -14$

4. $\frac{x}{-11} = 3$

5. $3 + x = -5$

6. $21 = -3x$

7. $x - 4 = -5$

8. $\frac{x+2}{6} = -3$

9. $16 = -4x$

10. $\frac{2r}{7} = -4$

11. $\frac{y-4}{3} = 7$

12. $9 = -\frac{3y}{11}$

13. $14 = -\frac{7k}{5}$

14. $\frac{t}{12} - 1 = 1$

15. $\frac{3x}{4} = 15$

16. $\frac{4}{x} - 1 = -2$

17. $5 - 2x = 17$

18. $-6 + \frac{3}{t} = -1$

Solve and Check your answer

19. $11+0.5x=5$

Check

20. $\frac{5r}{9}+1=11$

Check

21. $16=-32+4k$

Check

22. Lisa is cooking muffins. The recipe calls for 7 cups of sugar. She has already put in 2 cups. How many more cups does she need to put in?

23. At a restaurant, Mike and his three friends decided to divide the bill evenly. If each person paid $13 then what was the total bill?

24. How many packages of diapers can you buy with $40 if one package costs $8?

25. Last Friday Trevon had $29. Over the weekend he received some money for cleaning the attic. He now has $41. How much money did he receive?

26. Last week Julia ran 30 miles more than Pranav. Julia ran 47 miles. How many miles did Pranav run?

27. How many boxes of envelopes can you buy with $12 if one box costs $3?

DAY 2 - Solve MULTI Step Equations

1. $r-2=-r+18$

2. $4+z=z+3z-2$

3. $r-3=-2(r+3)$

4. $3(x+6)=2(x-1)$

5. $\frac{5a-2}{3}=1$

6. $6=m-(3+2m)$

7. $1-(2+w)=w+5$

8. $\frac{2}{3}(x+3)=4$

9. $6t-7=2t+5$

10. $27=5-\frac{y}{3}$

11. $\frac{4x-1}{3}=5$

12. $-6=\frac{n}{2}-10$

13. $-5(4x-2)=-2(3+6x)$

14. $\frac{3x-2}{2}=\frac{6}{4}$

15. $-2x+4=3x-2$

Solve

16. $\frac{y}{2}=\frac{y}{3}-1$

17. $\frac{y}{4}=\frac{y}{5}+1$

18. $\frac{x+1}{3}+\frac{x-2}{7}=1$

19. Aliyah had $24 to spend on seven pencils. After buying them she had $10. How much did each pencil cost?

20. The sum of three consecutive even numbers is 48. What are the smallest of these numbers?

21. You bought a magazine for $5 and four erasers. You spent a total of $25. How much did each eraser cost?

22. Sumalee won 40 super bouncy balls playing horseshoes at her school's game night. Later, she gave two to each of her friends. She only has 8 remaining. How many friends does she have?

23. Imani spent half of her weekly allowance playing mini-golf. To earn more money her parents let her wash the car for $4. What is her weekly allowance if she ended with $12?

24. How old am I if 400 reduced by 2 times my age is 244?

DAY 3 - Rearranging Formulas

Solve for x

1. $y = x + a$

2. $y = \frac{x}{5}$

3. $y = 2x + 7$

4. $y = 2x - a$

5. $2w = 3x$

6. $ax - y = 2y$

7. $y = 7 - 2x$

8. $2(x + a) = y$

9. $ax - y + z = b$

10. $\frac{x}{a} = \frac{y}{z}$

11. $\frac{x}{a} = \frac{y+z}{b}$

12. $\frac{1}{3}x + 2y = 3z$

13. The equation $s = \frac{w - 10e}{t}$ models the speed in words per minute, s, at which someone types. The speed, s, is related to the number of words typed, w, the number of errors, e, and the time spent typing in minutes, t.

Alex types 525 words in 5 min, with 10 errors. What is Alex's typing speed?

14. Use the equation for typing speed from question 13. Melanie's typing speed is 100 word/min. She types 800 words in 7 min. How many errors did Melanie make?

Solve for indicated letter

15. $y = mx + c$ solve for c

16. $y = mx + c$ solve for m

17. $2s = 2ut + at^2$ solve for a

18. $A = 4\pi r^2$ solve for r

19. $A = lw$, solve for w

20. $V = lwh$, solve for h

21. $P = 2l + 2w$, solve for l

22. $C = 2\pi r$, solve for r

23. $A = \frac{bh}{2}$, solve for h

24. $A = p + prt$, solve for t

25. $A = 2\pi r^2 + 2\pi rh$, solve for h

26. $V = \pi r^2 h$ solve for r

27. **The science teacher wrote three equations on a board that relate velocity, v, distance traveled, d, and the time to travel the distance, t, on the board.**

$$v = \frac{d}{t} \qquad t = \frac{d}{v} \qquad d = vt$$

Would you need to memorize all three equations or could you just memorize one? Explain your reasoning.

DAY 4 – More Rearranging Formulas

Solve for x

1. $ax + 3b = 2f$

2. $\frac{x}{5} - 7 = 2q$

3. $\frac{x}{6} - \frac{x}{7} = ab$

4. $\frac{x+b}{4} = c$

5. $\frac{3ax+2b}{c} = 4d$

6. $3ax + b = c$,

7. Solve for u.
$\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$

8. Solve for s.
$A = s^2$

9. Solve for h.
$V = \pi r^2 h$

10. Solve for m.
$T = 4\sqrt{m}$

11. Solve for d.
$F = G\frac{mn}{d^2}$

12. Solve for y.
$ax + by = c$

13. Solve for b_1.
$A = \frac{1}{2}h(b_1 + b_2)$

14. Solve for m.
$K = \frac{1}{2}mv^2$

15. Solve for v.
$K = \frac{1}{2}mv^2$

16. The speed of a car after t seconds is given by the formula $v = u + at$
where u is the starting speed and a is the acceleration.

Rearrange this formula to make the subject:

a u **b** t

17. In an electrical circuit, the formula relating power, P, to the current, I, and resistance, R, is $P = I^2R$.

Rearrange this formula to make the subject **a** R **b** I

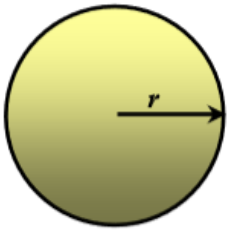
18. If a ball is thrown up in the air at a velocity of v, the height it reaches is given by $h = \frac{v^2}{2g}$ where g is the acceleration due to gravity.

Rearrange this formula to make the subject v.

19. A formula for converting temperatures is $C = \frac{5}{9}(F - 32)$
where C is the temperature in degrees Celsius, and F is the temperature in degrees Fahrenheit.

Rearrange this formula to make the subject F.

20. The volume of a sphere of radius r is given by the formula $V = \frac{4}{3}\pi r^3$



Rearrange this formula to make the subject r.

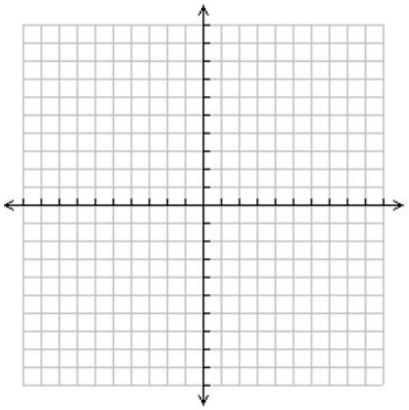
DAY 5 - Standard Form of a Line versus Slope Y-int Form

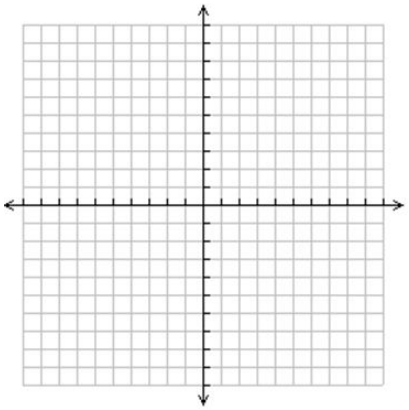
Rearrange into slope y-intercept form, then sketch

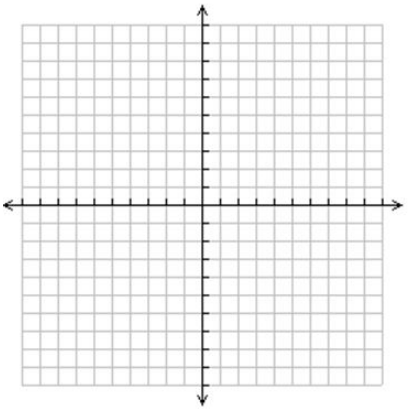
1. $3x + y - 8 = 0$

2. $2x - 3y + 12 = 0$

3. $x - 2y + 10 = 0$

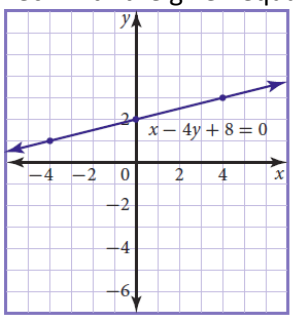






From the graph locate the slope and y-int then record the equation in slope y-int form. Then convert to standard from and check with the given equation in the picture.

4.



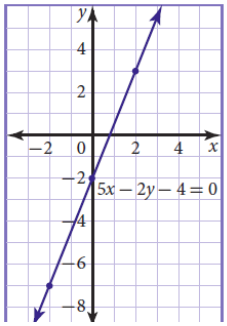
y-int=

slope =

equation in slope y-int form:

Convert to standard form

5.



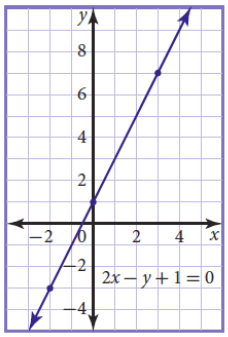
y-int=

slope =

equation in slope y-int form:

Convert to standard form

6.



y-int=

slope =

equation in slope y-int form:

Convert to standard form

7. The line $3x + 4y + C = 0$ passes through $(1, 2)$. Find the value of C.

8. The line $y = 4x + b$ passes through $(8, -3)$. Find the value of b.

9. A banquet hall charges according to the equation $C = 25n + 250$, where C represents the total cost in dollars to rent the hall, and n represents the number of people attending the event. If the total cost to rent the hall for a particular event was \$3375, how many people attended the event?

10. Dawson knows that the formula for the perimeter of a rectangle is $P = 2l + 2w$. He has 180 m of fencing to enclose a rectangular play area with a maximum width of 32 m. What is the minimum length of the play area? Explain.

11. Mr. Singh has \$300 in a savings account that pays 0.5% per year simple interest. In the equation $A = 300 + (0.005 \times 300)n$, A represents the total amount in Mr. Singh's account in dollars, and n represents the number of years. At this rate, how long will it take for the balance in Mr. Singh's account to reach \$375?

12. Dwight is a racecar driver. He knows the distance an object travels can be found using the formula $d = vt + \frac{1}{2}at^2$, where d represents the distance travelled in metres, v represents the starting speed in metres per second, t represents the time interval of the trip in seconds, and a represents the acceleration in metres per second squared during the interval.

Dwight travels 53 000 m by accelerating at 24 m/s^2 for 30 s from a fixed starting speed. What is Dwight's starting speed?

DAY 6 - Word Problems

1. John bought a new television. The total cost includes a delivery charge of $120, plus taxes of 13%.
    a. Assign variables and create an equation for this problem.
    b. Determine the cost of the television before the delivery charge and the taxes if the total cost was $540.

2. The movie theatre charges $5 per children and $10 per adults for one movie.
    a. Assign variables and create an equation for this problem.
    b. How many child tickets were sold, if the total sales was $2500 and 150 adult tickets were sold?

3. Ted and Ben are swimming laps in a pool that is 50 m in length. They start at opposite ends of the pool at the same time. Ted swims 10 m/min faster than Ben does. After 2 min they swim by each other.
    a. Assign variables and create an equation for this problem.
    b. How fast is each person swimming?

4. Lin is tracking the progress of her plant's growth. Today the plant is 5cm high. The plant grows 1.5cm per day.
    a. Assign variables and create an equation for this problem.
    b. What is the height of the plant after 2 weeks?
    c. Find how many days have passed if the plant is 20cm tall?

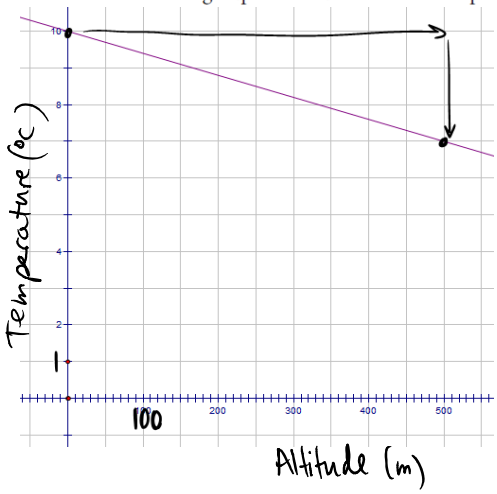
5. Flight 47 leaves Toronto Pearson International Airport en route to Vancouver. It travels at an average speed of 500 km/h. One hour later, a cargo flight leaves Pearson for Vancouver, travelling at an average speed of 750 km/h. Let t represent the time in hours that Flight 47 has flown. Solve the equation $500t = 750(t - 1)$ to find out when the cargo plane catches up with Flight 47.

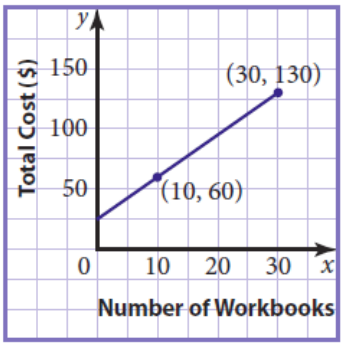
6. Jack and Diane are bus drivers who drive the same route. Jack drives the regular bus, which travels at an average speed of 35 km/h. Diane drives the express bus, which travels at an averag speed of 60 km/h. Diane completes her route in $\frac{3}{4}$ h less time tha Jack does. Solve the equation $60(t - 0.75) = 35t$ to find the length of time Jack takes to complete the route. How long does Diane take?

7. With every increase in altitude of 1000 m, the temperature decreases by about 6°C. At the base of a mountain the temperature is 10°C.

a) Write an equation to model the temperature on the mountain.

b) The temperature outside the tents at the first camp for climbers is −10°C. How high up the mountain is the camp?



8. 

The graph shows how the total cost, in dollars, to ship workbooks is related to the number of workbooks.

a) Write an equation in the form $y = mx + b$ for this relation.

b) What do the values of m and b represent?

c) Jee-Yun has a budget of $200 for workbooks. How many can she buy?

Practice TEST

Solve

1. $x + 15 = -2$

2. $4x = -28$

3. $3 = -\frac{5}{x}$

4. $5p + 2 = -13$

5. $5x - 8 = 6 - 2x$

6. $3(y + 8) = -y$

7. $\frac{r}{3} - 2 = 7$

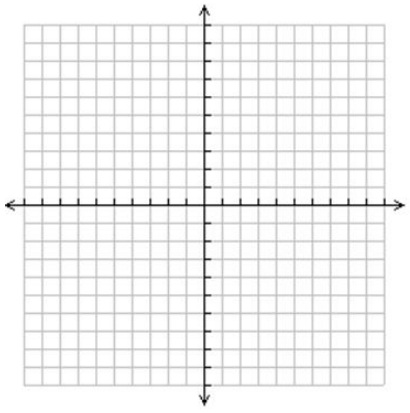
8. $\frac{k+2}{5} = -4$

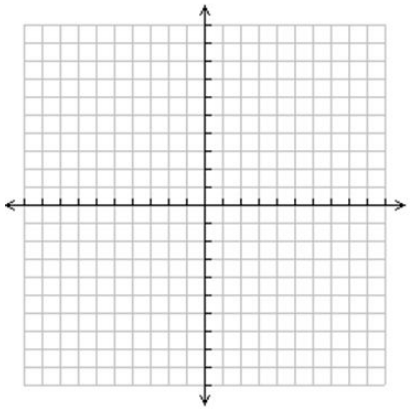
9. $\frac{1}{2}(9 - x) = 1$

Write the equation in slope *y*-intercept form. Then sketch

10. $4x + 2y + 6 = 0$

11. $5x - y - 3 = 0$





Rearrange the formula to get the letter the bracket isolated.

1. $S = t + a$ (t)

2. $PV = T$ (V)

3) $S = \dfrac{VAT}{500}$ (T)

4. $V^2 = 4gh$ (h)

5. $a = \dfrac{p}{q}$ (p)

6. $v = u + at$ (u)

7. Isolate y

$x = 2(y - 1) + 8$

8. If the line $x + By + 3 = 0$ passes through $(0,-2)$, determine the value of B.

9. Heidi plans to add a cedar deck to her house. She asked Robin and Just Decks for estimates. Robin will charge $2000 for materials and $50 per hour for labour. Just Decks will charge $1800 for materials and $80 per hour for labour.

   a. Assign variables and create two equations for Robin and Just Decks.
   b. If Heidi thinks the job should not take more than 10 hours, who should she hire to build her deck?

10. A company's postage machine starts the week with a balance of $40. Each time an envelope is stamped, $0.55 is deducted from the balance.

    a. Assign variables and create an equation for this problem.
    b. If the balance is $4.25, how many envelopes were stamped?