THE 5 STEPS TO SOLVING ALGEBRA

1. Familiarize yourself with the problem
2. Translate the problem to an equation
3. Solve the equation
4. Test your answer by placing back in the original equation
5. State the answer clearly
FIVE TIMES THE SUM OF 3 AND SOME NUMBER IS 70. WHAT IS THE NUMBER?

- Make the unknown (X)
- Summing means to add
- \(5(x + 3) = 70\)
- Distribute the 5
- \(5x + 15 = 70\)
- \(5x + 15 - 15 = 70 - 15\)
- \(5x = 55\)
- \(X = 11\)
- \(5(11 + 3) = 70\)
- \(5 \times 14 = 70\)  YES IT DOES!!!
TWICE THE SUM OF 4 AND SOME NUMBER IS 34. WHAT IS THE NUMBER?

- $2(x+4) = 34$
- $2x + 8 = 34$
- $2x = 26$
- $x = 13$
- $2(13 + 4) = 34$
- $2*17 = 34$
- TRUE
AMY PAID $63.75 FOR A PAIR OF NEW BALANCE 903 RUNNING SHOES DURING A 15% OFF SALE. WHAT WAS THE REGULAR PRICE?

- Saying “X” is the same as saying 1X, I have one X.
- X will stand for the regular price of the shoes
- X * 0.15 will stand for the amount discounted
  - 15% of the shoes
- The regular price minus the 15% discount = $63.75
  - X – (X*0.15) = $63.75
  - 1X - .15X = 63.75
  - .85X = 63.75
  - X = $75.00
DOUG PAID $72 FOR A PORTABLE CD PLAYER DURING A 20% OFF SALE. WHAT WAS THE REGULAR PRICE?

- $X - 0.20X = 72$
- $0.80X = 72$
- $X = 72/0.80$
- $X = 90$
- $X = $90.00
IN 1997, YIANNIS KOUROS SET THE RECORD FOR THE GREATEST DISTANCE RUN IN 24 HRS. BY RUNNING 188MI. AFTER 8 HRS, HE WAS APPROX. TWICE AS FAR FROM THE FINISH LINE AS FROM THE START. HOW FAR HAD HE RUN?

- Start = x
- Twice as far from the finish line = 2x
- So, x + 2x = 188
- 3x = 188
- x = 188/3
- x = 62.66
THE WORLD’S OLDEST GROOM WAS 19 YEARS OLDER THAN THE BRIDE. TOGETHER, THEIR AGES TOTALED 187 YEARS. HOW OLD WERE THE BRIDE AND GROOM?

- Bride = x
- Groom = x + 19
- Add them together and they equal 187
- \((x) + (x + 19) = 187\)
- \(2x + 19 = 187\)
- \(2x = 168\)
- \(x = 84\)
- Bride was 84 and groom was 103.
THE SECOND ANGLE OF A TRIANGLE IS THREE TIMES AS LARGE AS THE FIRST. THE THIRD ANGLE IS 30 DEG. MORE THAN THE FIRST. FIND THE MEASURE OF EACH ANGLE.

- To solve this problem, you need to know that the sum of all angles in a triangle equal 180 deg.
- The first angle will be \( x \)
- The 2\(^{nd} \) angle is \( 3x \)
- The 3\(^{rd} \) angle is \( x + 30 \)
- \((x) + (3x) + (x + 30) = 180\)
- \( 5x + 30 = 180 \)
- \( 5x = 150 \)
- \( x = 30, 90, 60 \)
THE 2\textsuperscript{nd} ANGLE OF A TRIANGLE IS 4 TIMES AS LARGE AS THE FIRST. THE 3\textsuperscript{rd} ANGLE IS 45 DEG. LESS THAN THE SUM OF THE OTHER TWO ANGLES. FIND THE MEASURE OF EACH ANGLE

- 1\textsuperscript{st} angle = x
- 2\textsuperscript{nd} angle = 4x
- 3\textsuperscript{rd} angle = x + 4x – 45
- (x) + (4x) + (x + 4x - 45) = 180
- 10x – 45 = 180
- 10x = 225
- x = 22.5, 90, 67.5
THE TOP OF THE HANCOCK BUILDING IN CHICAGO IS A RECTANGLE WHOSE LENGTH IS 60 FT. MORE THAN THE WIDTH. THE PERIMETER IS 520 FT. FIND THE WIDTH AND LENGTH OF THE RECTANGLE

- First, you need to know that the perimeter is equal to twice the length plus twice the width
- Width = x, Length = x + 60
- \(2x + 2(x + 60) = 520\)
- \(2x + 2x + 120 = 520\)
- \(4x + 120 = 520\)
- \(4x = 400\)
- \(x = 100\)
- Width = 100, Length = 160
- \(200 + 320 = 520\) TRUE
The perimeter of the State of Wyoming is 1280 miles. The width is 90 miles less than the length. What is the width and length of Wyoming?

- Length = x, Width = x - 90
- \(2x + 2(x - 90) = 1280\)
- \(2x + 2x - 180 = 1280\)
- \(4x = 1460\)
- \(x = 365\)
- Length is 365 miles, Width is 275 miles
- \((2 \times 365) + (2 \times 275) = 1280\)
- \(730 + 550 = 1280\) TRUE
SARAH’S INVESTMENT IN AOL GREW 28% TO $448. HOW MUCH DID SHE INVEST?

- The original investment is $x$
- 28% of the original investment is $(x \times 0.28)$
- $x + x \times 0.28 = 448$
- $1x + 0.28x = 448$
- $1.28x = 448$
- $x = 448/1.28$
- $x = 350$
- Her original investment was $350
SHARON INVESTED MONEY IN A SAVINGS ACCOUNT AT A RATE OF 6% SIMPLE INTEREST. AFTER 1 YEAR, SHE HAS $6996 IN THE ACCOUNT. HOW MUCH DID SHARON ORIGINALLY INVEST?

- The original amount will be $x$
- The 6% interest will be $.06x$
- $(x) + (.06x) = 6996$
- $1.06x = 6996$
- $x = 6996/1.06$
- $x = 6600$
- Her original investment was $6600$

- Remember that $x$ means the same as $1x$!!!
NEXT WEEK – MAKING IT MORE REAL