DAY 1 – TRANSLATING ENGLISH TO MATH

1. Mathematics is a language like any other. Below is a statement in Russian that we will translate word by word to English.

ПРИВЕТ! КАК ДЕЛА? ХОРОШО.

Pronunciation:

Translation:

2. Same idea is applied when translating English to Math.
But first we'll need a Dictionary:

+	–
×	÷

=

$( )^2$ $\sqrt[2]{\ }$ $( )^3$ $\sqrt[3]{\ }$

Translate each phrase into expression.

3. a number increased by four, times another number

4. one quarter less than a value

LOOK FOR 'less than'

LOOK FOR 'is'

5. eleven percent of a mass ⟷ mass increased by eleven percent
compare

Translate each sentence into equation

6. Three times a value, decreased by four, is two.

7. One number is five times larger than two more than a second number.

8. Half of a number decreased by 5 is 15.

compare

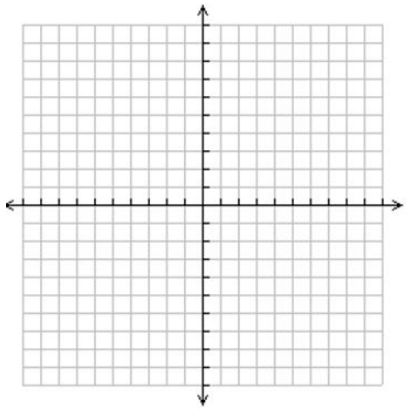
9. Half of a number which was decreased by 5, is 15.

9. Graph both lines to find POI

$y = 4x + 3$
$y = -x - 2$

Line 1 m= b=

Line 2 m= b=



Therefore the meeting point POI is (,)

DAY 2 – TRANSLATING ENGLISH TO MATH

Translate each sentence into an algebraic equation. Record let statements.

1. Buy the phone for $400 and pay $45 per month

2. Webz charges a flat monthly fee of $5 plus $1 per hour

3. Brian's car costs him $4000 plus $0.20 per km every year.

One rate 'per'

Two rates 'per'

Translating key words

TRANSLATE INTO TWO ALGEBRAIC EQUATIONS.

4. Smaller tables cost $29.95 each and bigger tables cost $39.95 each. The total price is $359.50. There are two more bigger tables than smaller tables.

5. A rectangle has a perimeter of 172 cm. The length of the rectangle is 23 cm longer than twice the width.

6. Charlene is looking into cell phone plans. Cell Plus gives unlimited minutes for $50 in a month. A1 Cell offers a $10 monthly fee, plus 5¢/min

DAY 3 – Graphing Method for finding POI

The student council is deciding which banquet hall to book for this year's graduation dinner and dance. Thompson Hall charges a fixed cost of $1200 plus $35 per student. Adeline's Country Club charges $1000 plus $40 per student.

1. Write a system of linear equations to represent the situation.

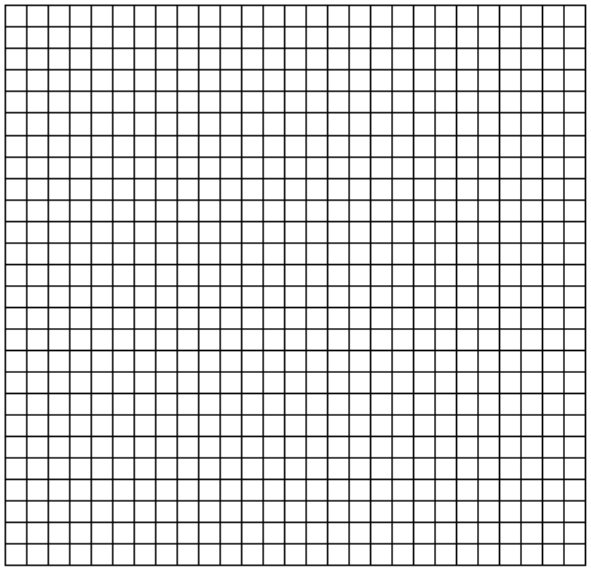
2. Fill in the tables to help you graph the lines

Thomson:

students	total cost

Adeline:

students	total cost



3. Find and check the point of intersection.

4. What does this point of intersection represent?

5. What hall should they rent if they expect a lot of students to come?

Filling out the tables for each line:

Ensure graph has:

DAY 4 + 5– Elimination Method for finding POI

1. $4 + y - 3x = 0$
   $x + y = 8$

2. $3x + 2y - 1 = 0$
   $y = -x + 3$

DAY 6 + 7 – SUBSTITUTION METHOD FOR FINDING POI

1. $8x - y = 10$
   $3x - y = 9$

2. $4x + 2y = 7$
   $x + y + 6 = 0$

Name: _____

Creating Equations

One Rate + no total

Hall A charges $600 deposit and $20 per person. Hall B charges $500 plus $35 per person.

$y = \_\_\_ x + \_\_\_$

rate # ↗ ↖ initial #

let y be total cost
let x be # of people

A: $y = 20x + 600$

B: $y = 35x + 500$

Two rates + given total

Playing tennis burns 25kJ/min and cycling burns 35kJ/min. You excercised for 50min total and burned 1450kJ of energy.

$\_\_\_ = \_\_\_ x + \_\_\_ y$

↑ total ↑ rate #1 ↖ rate #2

let x be time playing tennis
let y be time cycling

min: $50 = x + y$

energy (kJ): $1450 = 25x + 35y$

Translating

Lisa weighs 7kg less than Alex. The sum of their masses is 165kg. watch the order

let L be Lisa's mass
let A be Alex's mass

$L = A - 7$

$A + L = 165$

Percent

Trail mix A has 10% berries and trail mix B has 20% berries. Mix them together to get 16% of 500grams in total.

let A be grams of mix A
let B be grams of mix B

grams: $500 = A + B$

%: $0.16(500) = 0.10A + 0.20B$

Shape

The perimeter of rectangular pool is 46m. The width is 5m shorter than twice the length. watch order

$46 = 2L + 2W$

$W = 2L - 5$

Choosing a Scale

1. Find range: Biggest − Smallest
2. Count available squares

$\frac{\text{Range}}{\text{squares}}$ ↑ round up or $\frac{\text{Squares}}{\text{Range}}$ ↓ round down

Elimination

$2x + 5y = -20$

$5x - 3y + 15 = 0$

$2x + 5y = -20$ (·(-5) ·(-5) ·(-5))

$5x - 3y = -15$ (·(2) ·(2) ·(2))

$-10x - 25y = 100$

$10x - 6y = -30$

Add

$-31y = 70$

$y = \frac{70}{-31} \div -2.3$

$2x + 5y = -20$ (·(3) ·(3) ·(3))

$5x - 3y = -15$ (·(5) ·(5) ·(5))

$6x + 15y = -60$

$25x - 15y = -75$

Add

$31x = -135$

$x = \frac{-135}{31} \div -4.4$

∴ POI $(\underset{x}{-4.4}, \underset{y}{-2.3})$

Substitution

$x + 2y = -5$ ①

$3x - y = -1$ ②

* isolate variable without coefficient
* alternate equations

isolate x in ①

$x + 2y = -5$

$x = -5 - 2y$

sub into ②

$3(-5 - 2y) - y = -1$

$-15 - 6y - y = -1$

$-15 - 7y = -1$

$-7y = -1 + 15$

$-7y = 14$

$y = -2$

sub in ①

$x + 2y = -5$

$x + 2(-2) = -5$

$x - 4 = -5$

$x = -5 + 4$

$x = -1$

∴ POI $(\underset{x}{-1}, \underset{y}{-2})$