

**UNITS 1,2: Integers, Graphing and Relations**

1. Fill in the blanks.

a) The y coordinate of the point  $(-3,2)$  is \_\_\_\_\_.b) The point  $(-7, 3)$  lies in quadrant \_\_\_\_\_.

2. Evaluate.

a)  $-3 - 7$

b)  $-2(+9)$

c)  $\frac{-24}{-8}$

d)  $(-4)^2$

e)  $\sqrt{121}$

= \_\_\_\_\_

= \_\_\_\_\_

= \_\_\_\_\_

= \_\_\_\_\_

= \_\_\_\_\_

3. Evaluate. *Show all BEDMAS steps.*

a)  $5 - 7 - 2 + 8 - 1$

b)  $3 - 2(-5)$

c)  $6(1 - 4) - 2(-1 + 3)$

4. Evaluate for  $x = -2$  and  $y = -3$ . *Show your substitution and steps.*

$$2xy - y$$

5. State whether each is **linear or non-linear**.

a)  $y = 2x^2 + 3$

\_\_\_\_\_

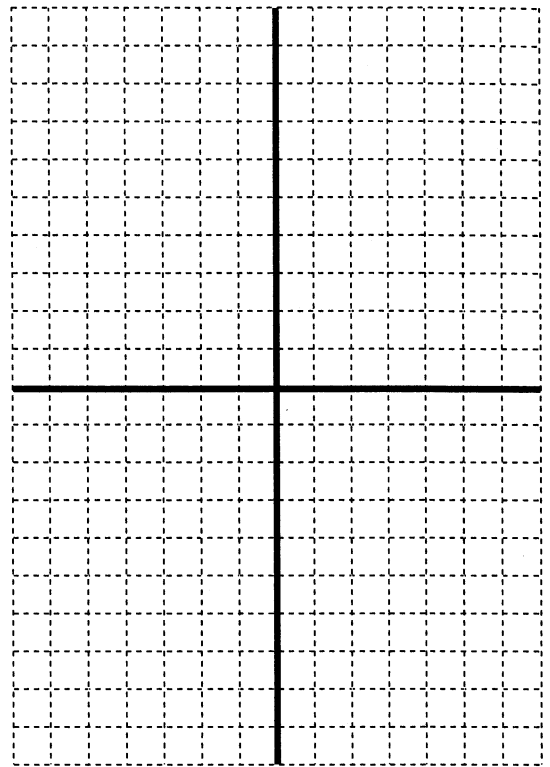
b)  $y = \frac{-3}{4}x + 1$

\_\_\_\_\_

6. i) Complete the table of values.  
**Show all of your work to the right of the table**  
 ii) Graph on the grid provided. **Label the grid fully.**

$$y = x^2 + 2$$

x	y
-2	
0	
2	



7. a) Complete the following tables. For **Finite Differences**.  
 b) State the type of relation. ( **Linear or Non-linear** )

i)

x	y	Difference in y-values
-2	-9	
-1	-4	
0	1	
1	6	

Type of Relation: \_\_\_\_\_

### **UNIT 3: Algebra and Equations**

1. Simplify.

a)  $-2x + 5y - 7x - 3y - 3x$

b)  $4(5z - 7)$

c)  $2(3x - 1) - 5(x + 1)$

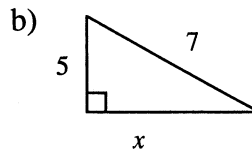
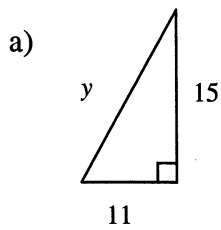
2. Solve. **Show all steps**

a)  $x - 12 = -19$

b)  $4x + 3 = 27$

c)  $3x + 8 = -2x - 12$

3. Use the Pythagorean Theorem to determine the **length** of each unknown side. Round to 1 decimal place if necessary.



## UNIT 4: Rational Numbers

1. Fill in the blanks.

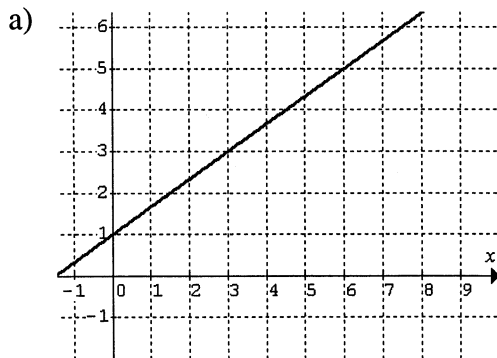
a) Reduce to lowest terms.  $\frac{-16}{24} = \underline{\hspace{2cm}}$       b) Express as an improper fraction  $-5\frac{3}{8} = \underline{\hspace{2cm}}$

2. Evaluate. *Leave your answer as a fractions in lowest terms.*

a)  $\frac{-3}{5} + \frac{1}{6}$       b)  $\frac{10}{3} \times \frac{-4}{5}$       c)  $1\frac{3}{7} \div \frac{2}{5}$

## UNIT 5: Slope and Applications

1. Find the slope of each of the following. *State the formula used.*

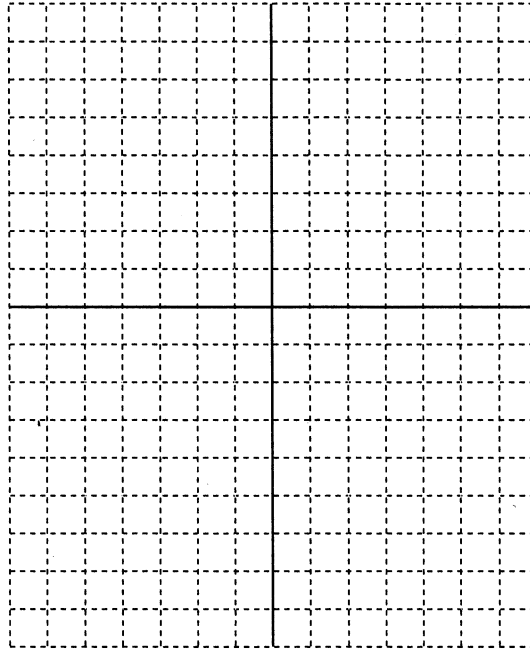


b)  $(3, -7)$  and  $(-8, 1)$

2. Graph  $y = \frac{3}{4}x - 2$  using the slope and y-intercept. *Label your graph fully.*

The slope is \_\_\_\_\_.

The y-intercept is \_\_\_\_\_.



3. Tickets for the Kitchener Rangers cost \$18/ticket.  
If you order online you must also pay \$5 for a service and delivery fee.

a) State the slope with units. \_\_\_\_\_

b) State the y-intercept with units. \_\_\_\_\_

- c) Write an equation to represent  $C$ , the cost of ordering  $n$  tickets online.

- d) Use your equation to calculate the cost of ordering 9 tickets.

## UNIT 6: Geometry

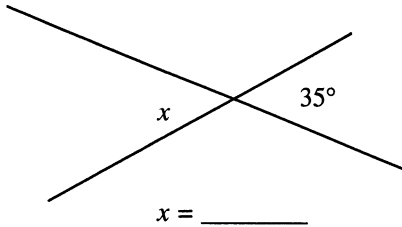
1. Fill in the blanks.

a) The angles in any triangle add to \_\_\_\_\_.

b) Angles that are smaller than  $90^\circ$  are called \_\_\_\_\_ angles.

2. Determine the value of the unknown(s) in each diagram.

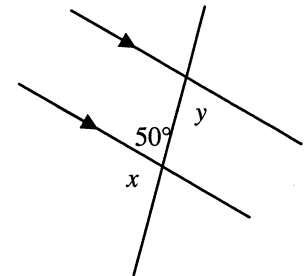
a)



b)

$x = \underline{\hspace{2cm}}$

$y = \underline{\hspace{2cm}}$



## UNIT 7: Measurement

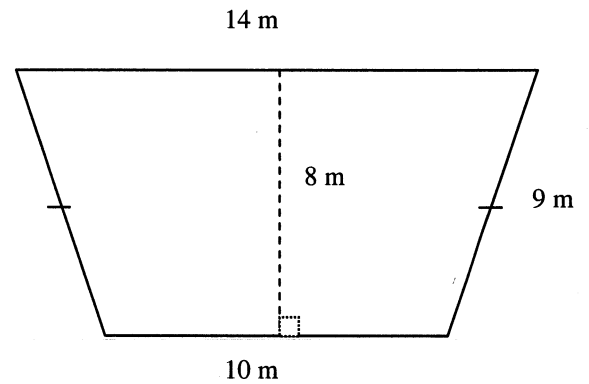
State any formula used.

Round all answers to 1 decimal place.

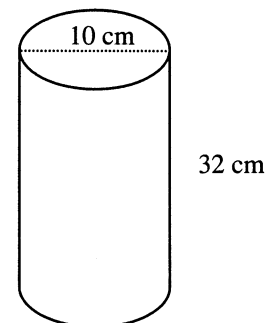
Use your  $\pi$  button or 3.14159

Include the correct units in your answer.

1. Determine the **area** and **perimeter**.



2. Determine the **volume**.



## **UNIT 8: Ratios and Proportions and other stuff**

***\*Show full solutions as done in class\****

1. The ratio of boys to girls is 7:13 at Southwood Secondary School.  
How many boys are there if there are 152 girls? (Answer to the nearest boy)

2. In 8 minutes, a student can type 205 words. Suppose she continues at this rate.  
How many words could she type in 39 minutes?

3. State the unit rate. Circle the one that is the fastest.

A: 300 km in 4 hours

B: 400 km in 5 hours

Unit rate = \_\_\_\_\_

Unit rate = \_\_\_\_\_

4. A store has iPads at 20% off. The regular price is \$300

a) Calculate the discount.

b) Calculate the sale price.

# UNITS 1,2: Integers, Graphing and Relations

1. Fill in the blanks.

a) The y coordinate of the point  $(-3, 2)$  is 2.

b) The point  $(-7, 3)$  lies in quadrant 2.

2. Evaluate.

a)  $-3 - 7$

$= -10$

b)  $-2(+9)$

$= -18$

c)  $\frac{-24}{-8}$

$= 3$

d)  $(-4)^2$

$= 16$

e)  $\sqrt{121}$

$= 11$

3. Evaluate. Show all steps.

a)  $5 - 7 - 2 + 8 - 1$

$13 - 10$

$= 3$

b)  $3 - 2(-5)$

$3 + 10$

$= 13$

c)  $6(1-4) - 2(-1+3)$

$= 6(-3) - 2(2)$

$= -18 - 4$

$= -22$

4. Evaluate for  $x = -2$  and  $y = -3$

$2xy - y$

$= 2(-2)(-3) - (-3)$

$= 12 + 3$

$= 15$

5. State whether each is **linear** or **non-linear**.

a)  $y = 2x^2 + 3$

non-linear

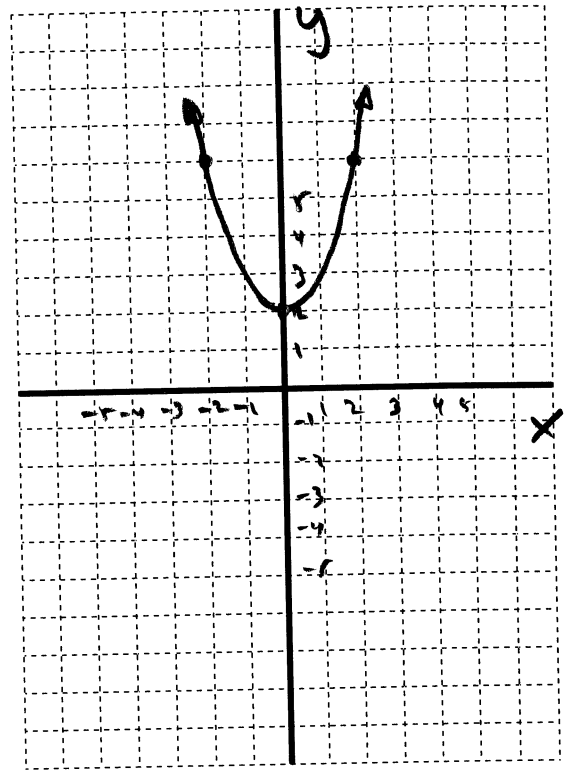
b)  $y = \frac{-3}{4}x + 1$

linear

6. i) Complete the table of values.  
*Show all of your work to the right of the table*  
 ii) Graph on the grid provided. *Label your graph fully.*  
 $y = x^2 + 2$

x	y
-2	6
0	2
2	6

$\rightarrow y = (-2)^2 + 2 = 6$   
 $\rightarrow y = (0)^2 + 2 = 2$   
 $\rightarrow y = (2)^2 + 2 = 6$



7. a) Complete the following tables. For **Finite Differences**.  
 b) State the type of relation. ( **Linear or Non-linear** )

x	y	Difference in y-values
-2	-9	-5
-1	-4	-5
0	1	-5
1	6	

Type of Relation: linear

### UNIT 3: Algebra and Equations

1. Simplify.

a)  $\underline{-2x} + 5y - \underline{7x} - 3y - \underline{3x}$   
 $= -12x + 2y$

b)  $4(5z - 7)$   
 $= 20z - 28$

c)  $2(3x - 1) - 5(x + 1)$   
 $= \underline{6x} - 2 - \underline{5x} - 5$   
 $= x - 7$

2. Solve. *Show all steps*

a)  $x - 12 = -19$

$x - 12 + 12 = -19 + 12$   
 $x = -7$

b)  $4x + 3 = 27$

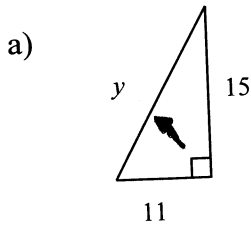
$4x + 3 - 3 = 27 - 3$   
 $\frac{4x}{4} = \frac{24}{4}$   
 $x = 6$

c)  $3x + 8 = -2x - 12$

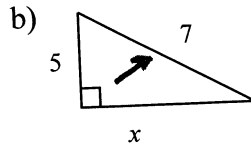
$3x + 8 + 2x = -2x - 12 + 2x$   
 $5x + 8 = -12$   
 $5x + 8 - 8 = -12 - 8$   
 $\frac{5x}{5} = \frac{-20}{5}$   
 $x = -4$



3. Use the Pythagorean Theorem to determine the **length** of each unknown side.  
Round to 1 decimal place if necessary.



$$\begin{aligned}
 h^2 &= a^2 + b^2 \\
 y^2 &= 11^2 + 15^2 \\
 y^2 &= 346 \\
 y &= \sqrt{346} = 18.6
 \end{aligned}$$



$$\begin{aligned}
 h^2 &= a^2 + b^2 \\
 7^2 &= x^2 + 5^2 \\
 49 &= x^2 + 25 \\
 49 - 25 &= x^2 + 25 - 25 \\
 24 &= x^2 \\
 \sqrt{24} &= x \\
 4.9 &= x
 \end{aligned}$$

### UNIT 4: Rational Numbers

1. Fill in the blanks.

a) Reduce to lowest terms.  $\frac{-16}{24} = \frac{-2}{3}$

b) Express as an improper fraction  $-5\frac{3}{8} = \frac{-43}{8}$

2. Evaluate. *Leave your answer as a fraction. (No decimals!)*

a)  $\frac{-3}{5} + \frac{1}{6}$

$$\begin{aligned}
 &= \frac{-18}{30} + \frac{5}{30} \\
 &= \frac{-13}{30}
 \end{aligned}$$

b)  $\frac{10}{3} \times \frac{-4}{5}$

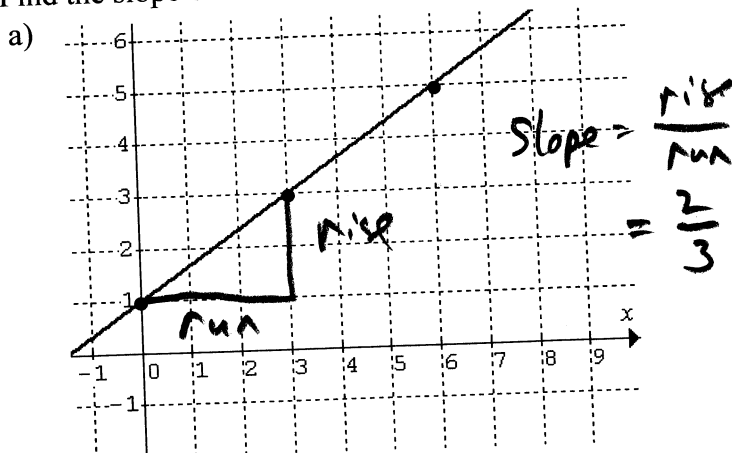
$$\begin{aligned}
 &= \frac{-40}{15} \\
 &= \frac{-8}{3}
 \end{aligned}$$

c)  $1\frac{3}{7} \div \frac{2}{5}$

$$\begin{aligned}
 &= \frac{10}{7} \times \frac{5}{2} \\
 &= \frac{50}{14} = \frac{25}{7}
 \end{aligned}$$

### UNIT 5: Slope and Applications

1. Find the slope of each of the following:



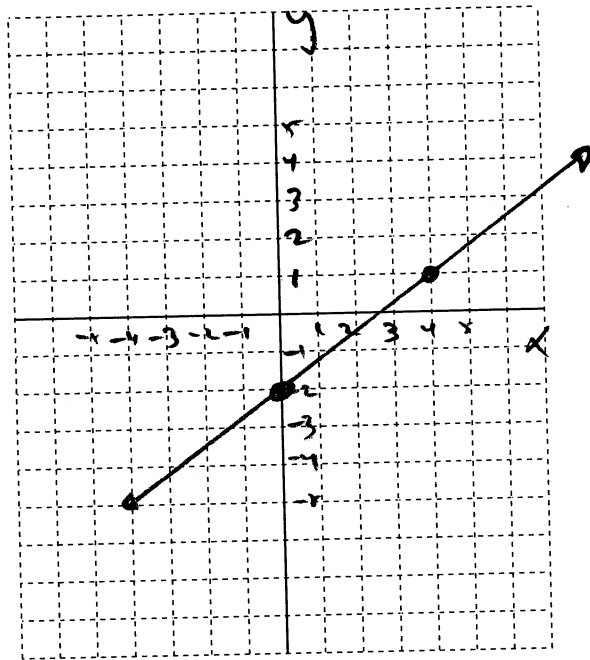
b)  $(3, 7)$  and  $(8, 1)$

$$\begin{aligned}
 \text{Slope} &= \frac{\Delta y}{\Delta x} \\
 &= \frac{(-7) - (1)}{(3) - (8)} \\
 &= \frac{-8}{-5} \\
 &= \frac{8}{5}
 \end{aligned}$$

2. Graph  $y = \frac{3}{4}x - 2$  using the slope and y-intercept. Label your graph fully.

The slope is  $\frac{3}{4}$ .

The y-intercept is  $-2$ .



3. Tickets for the Kitchener Rangers cost \$18/ticket.  
If you order online you must also pay \$5 for a service and delivery fee.

a) State the slope with units.

$\$18/\text{ticket}$

b) State the y-intercept with units.

$\$5$

- c) Write an equation to represent  $C$ , the cost of ordering  $n$  tickets online.

$$C = 18n + 5$$

- d) Use your equation to calculate the cost of ordering 9 tickets.

Show the substitution into your formula and the steps. Include a "therefore" statement.

$$C = 18(9) + 5$$

$$C = 167$$

$\therefore$  9 tickets will cost  $\$167$

## UNIT 6: Geometry

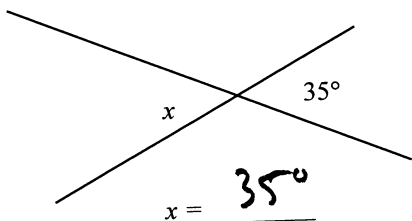
1. Fill in the blanks.

a) The angles in any triangle add to 180°.

b) Angles that are smaller than 90° are called acute angles.

2. Determine the value of the unknown(s) in each diagram.

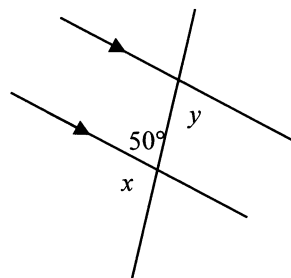
a)



b)

$$x = 130^\circ$$

$$y = 50^\circ$$



## UNIT 7: Measurement

State any formula used.

Round all answers to 1 decimal place.

Use your  $\pi$  button or 3.14159

Include the correct units in your answer.

1. Determine the area and perimeter.

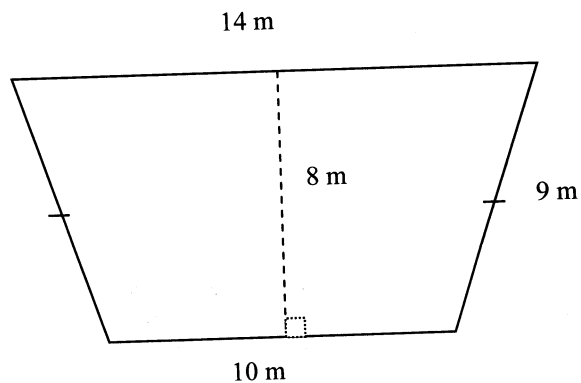
$$A = \frac{(a+b)h}{2}$$

$$P = 14 + 9 + 10 + 9$$

$$A = \frac{(10+14)(8)}{2}$$

$$= 42 \text{ m}$$

$$A = 76 \text{ m}^2$$

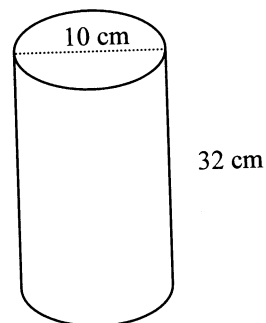


2. Determine the volume.

$$V = \pi r^2 H$$

$$V = \pi (5)^2 (32)$$

$$V = 2513.3 \text{ cm}^3$$



$$r = \frac{10}{2} = 5 \text{ cm}$$

## UNIT 8: Ratios and Proportions and other stuff

1. The ratio of boys to girls is 7:13 at Southwood Secondary School.  
How many boys are there if there are 152 girls? (Answer to the nearest boy)

$$\text{boys} : \text{girls} = \text{boys} : \text{girls}$$

$$7 : 13 = x : 152$$

$$(152) \frac{7}{13} = \frac{x}{152} (152)$$

$$81.8 = x$$

∴ there are 82 boys

2. In 8 minutes, a student can type 205 words. Suppose she continues at this rate.

- How many word could she type in 39 minutes?  
(Answer to the nearest word)

~~(39) 205 = x / 39~~

$$\text{min} : \text{words} = \text{min} : \text{words}$$

$$8 : 205 = 39 : x$$

$$\frac{8}{205} = \frac{39}{x}$$

$$(39) \frac{205}{8} = \frac{x}{39} (39)$$

$$x = 999$$

∴ she could type 999 words

3. State the unit rate. Circle the one that is the fastest.

A: 300 km in 4 hours

$$\text{Unit rate} = \underline{75 \text{ km/hour}}$$

<sup>fastest</sup>  
B: 400 km in 5 hours

$$\text{Unit rate} = \underline{80 \text{ km/hour}}$$

4. A store has iPads at 20% off. The regular price is \$300

- a) Calculate the discount.

$$20\% \text{ of } \$300$$

$$\downarrow \div 100 \downarrow$$

$$= 0.20 \times \$300$$

$$= \$60$$

∴ discount is \$60

- b) Calculate the sale price.

$$\$300 - \$60 = \$240$$

∴ sale price is \$240