GRADE 12 APPLIED
INTRODUCTION AND CLASS INVENTORY

Name:_____
Date: _____

This is a *small* selection of subjects from previous studies to sample how well students are prepared for Grade 12 Applied.

Complete it to the best of your ability without assistance. **IT IS NOT FOR MARKS. Answers are provided at the end of this inventory.**

This inventory is necessary to see at what level the class is at so as to tailor the course appropriately and consider which students may need to apply some additional effort with some additional support.

Show your work to better assess our class skill level. Even just a diagram is acceptable! (Numbers are actually a silly way to do math!) Use extra blank paper if necessary.

Use any cheat sheets you may have prepared from previous courses

Some relevant formulae and conversion factors are attached at the end of this inventory.

Round decimal answers to nearest 0.01

1. **Ratio and Proportion**. Water was leaking from a faucet at the *rate* of 1.5 litres every five minutes. How much water leaked out after 35 minutes?

2. **Ratio and Proportion**. The *ratio* of mango juice to guava juice in your secret recipe for fruit punch is 5 to 3. You have 350 ml of mango juice, how much guava juice do you need to follow your secret recipe.

3. **Algebra**. Evaluate [ie: calculate] (*without a calculator*)

a. $4 - 9 + 3 =$ b. $5^2 - (2 * 11) =$ c. $5 * (^{-}2)^3$

4. **Algebra**. Solve for the unknown:

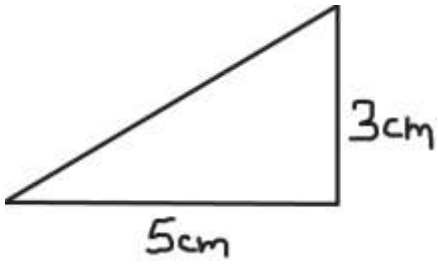
a. $2x + 7 = 29$; x = _____ b. $\frac{n}{4} - 3 = 2$

c. $\frac{2}{3}x - 5 = 3$

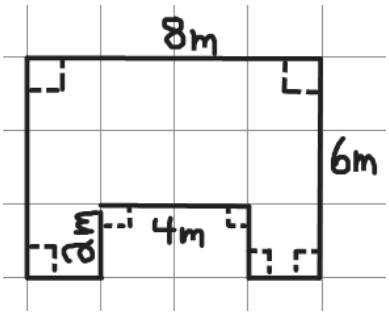
d. Given that P = \$1,000, r = 0.1, n = 4, and t = 5; calculate the value of A given that $A = P*(1+r/n)^{nt}$

5. **Geometry**

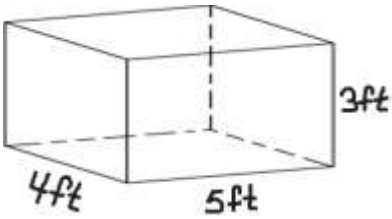
a. Calculate length *x* of the right triangle:



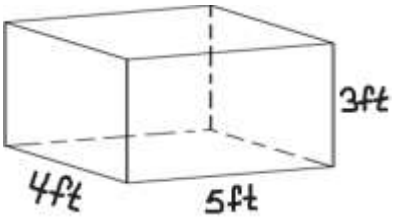
b. Calculate the area of the figure below



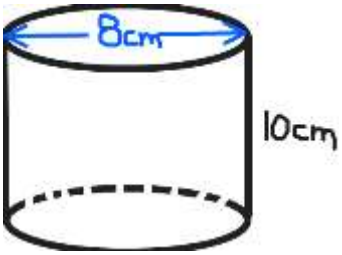
c. Calculate the **Surface Area** of the solid rectangular prism:



d. Calculate the **Volume** of the rectangular prism:



e. Calculate the volume of the cylinder:



f. Convert

50 feet = ____ metres

420 cm = _____ metres

4 square feet = _____ square inches

6. **Logic and Problem Solving**.

a. if three burgers and one coke costs $5.50 and a coke is 50 cents less that a single burger, how much does one burger cost? [show work method]

b. how many ways can you put up your three favourite posters in a line (horizontally aligned) on your bedroom wall? [show work method]

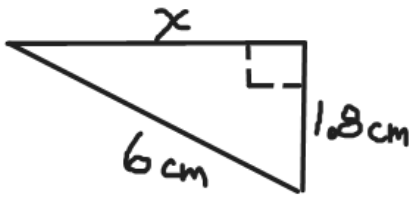
7. **Trigonometry**. Using a calculator; calculate:

a. $\sin^{-1}(0.500°)$

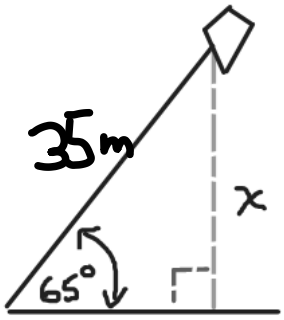
b. 5*cos (45°)

8. **Trigonometry**.

a. Determine Length x:

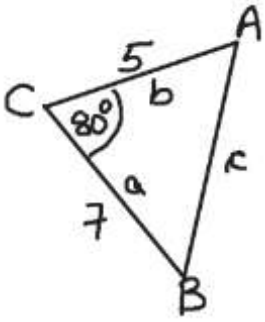


b. Determine the height, x, of the kite:

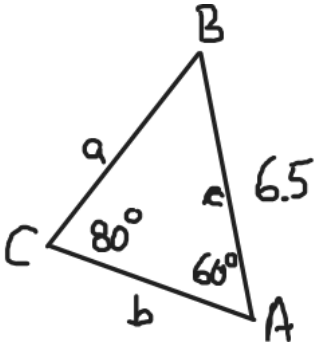


9. **Trigonometry**:

a. Using the Cosine Law determine length c:



b. Use the Law of Sines to determine



10. **Fractions, percents, decimals.** Complete the table: (the first row is done as an example). Use a calculator if necessary.

Simplified Fraction	Decimal	Percent
1/2	**0.5**	**50%**
$\frac{3}{4}$		
$\frac{1}{8}$		
	0.35	
		60%

11. **Finance**. Kyle deposits $600 in the bank for 10 years and then forgot he had that account. The interest paid was **simple interest** at a rate of 9.5%. What is the value of his account after those 10 years.

12. **Finance**. Karen invests $3,000 in her friend's business. Her friend promises a 7% annual percentage interest on Karen's investment compounded monthly. Determine the amount that Karen is owed after five years.

Use the compound interest formula: $A = P\left(1 + \frac{r}{s}\right)^{(n*S)}$

13. Functions and Relations

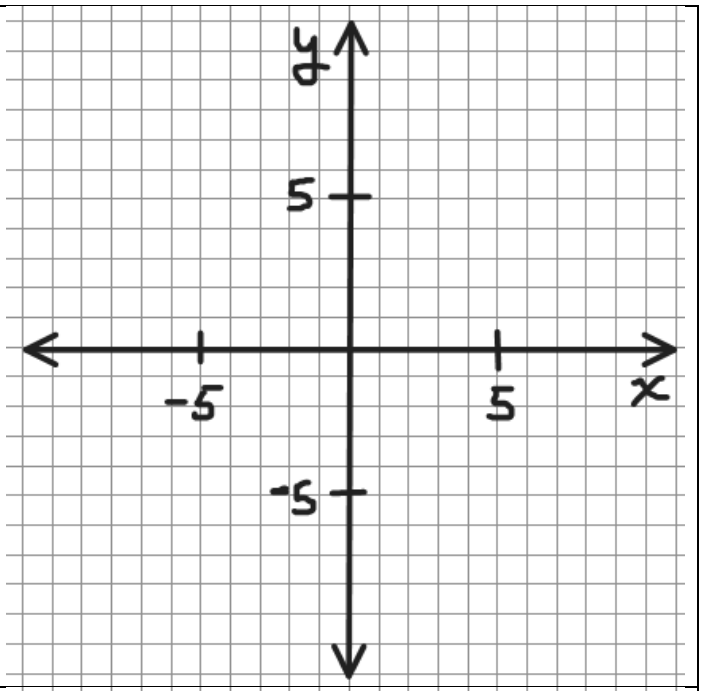
a. Graph the points that are given below as ordered (*x*, *y*) coordinate pairs.

A (4, 6)

B (3, ⁻8)

C (⁻7, 0)

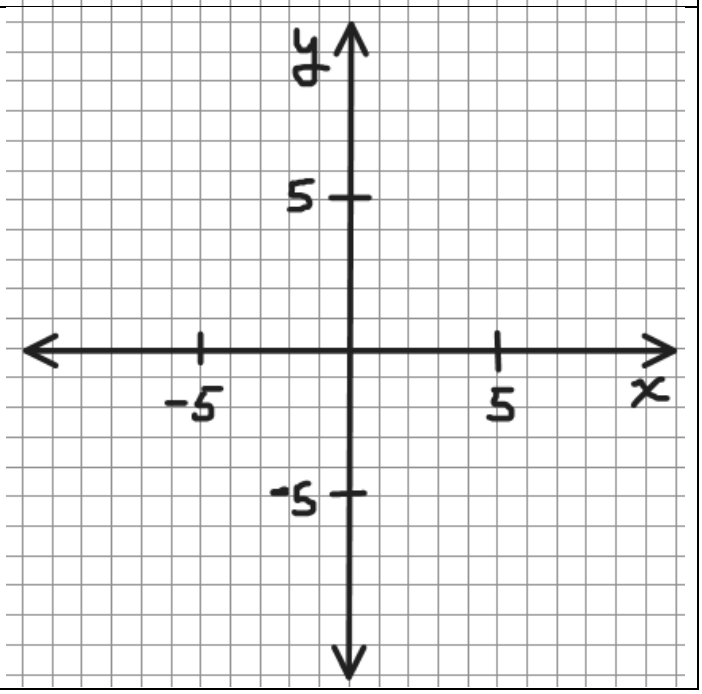
D (⁻4, ⁻3)



b. Graph the linear relationship **y = 3x – 7**

x	y
–1	
0	
1	
5	

Check it on a graphing tool on your mobile device!



USEFUL FORMULAE FOR THE INVENTORY

Proportions. If $\frac{\boldsymbol{a}}{\boldsymbol{b}} = \frac{\boldsymbol{c}}{\boldsymbol{d}}$ then *ad* = *bc*

Geometry

$Volume_{prism}$ = Base Area * height = B*h

Eg: $Volume_{Rectangular\ Prism}$ = l * w * h

Eg: $Volume_{\ Cylinder} = (\pi r^2)*h$

Volume of a Pyramid or cone is 1/3 the volume of corresponding prism or cylinder.

SA Prism, Pyramid or Cylinder = sum of all the area of all faces or lateral sides

$X\% \equiv {}^{x}/_{100}$

Trigonometry

Phythagorean Theorem: $c^2 = a^2 + b^2$; where c is the hypotenuse

$Sin\ (\angle A)\ = \frac{side\ opp\ to\ A}{hypotenuse}$; $cos\ (\angle A)\ = \frac{side\ adjacent\ to\ A}{hypotenuse}$;

$tan\ (\angle A)\ = \frac{side\ opp\ to\ A}{hside\ adj\ to\ A}$

Cosine Law: $c^2 = a^2 + b^2 - 2ab * \cos(C)$; $\angle C = cos^{-1}\left(\frac{a^2+b^2-c^2}{2ab}\right)$

Sine Law:

$\frac{\boldsymbol{a}}{\boldsymbol{\sin}\ (\boldsymbol{A})} = \frac{\boldsymbol{b}}{\boldsymbol{\sin}\ (\boldsymbol{B})} = \frac{\boldsymbol{c}}{\boldsymbol{\sin}\ (\boldsymbol{C})}$; $\frac{\boldsymbol{\sin}\ (\boldsymbol{A})}{\boldsymbol{a}} = \frac{\boldsymbol{\sin}\ (\boldsymbol{B})}{\boldsymbol{b}} = \frac{\boldsymbol{\sin}\ (\boldsymbol{C})}{\boldsymbol{c}}$

Finance:

$$A = P\left(1 + \frac{r}{S}\right)^{(n*S)}$$

Common Conversion Factors:

3.28 ft = 1 metre
12 inches = 1 foot
1,000 metres = 1 km
1 mL = 0.001 L
1 litre [L] = 1,000 millilitres [mL]
1 mile = 1.6 km
1 metre [m] = 100 centimetres [cm]

ANSWERS

1. 10.5 litres leaked out

2. 210 ml of guava juice is required

3. a) -2 b) 3 c) -40

4. a) x = 11 b) n = 20 c) x =12 d) A = $1638.62

5. a) 5.83 cm b) 40 m^2 c) 94 ft^2 d) 60 ft^3

e) $Vol_{cyl} \cong 502.65\ cm^3$ f) 15.24 m; 4.2 m; 576 in^2

6. a) a burger costs $1.50
b) 6 ways to arrange your posters

7. a. 30° b) 3.54

8. a) x = 5.72 long b) 31.72 metres high

9. a) c = 7.86 units long b) a = 5.72 units long

10.

Simplified Fraction	Decimal	Percent
1/2	0.5	50%
$\frac{3}{4}$	0.75	75%
$\frac{1}{8}$	0.125	12.5%
7/20	0.35	35%
3/5	0.60	60%

11. $1170 in the bank account

12. $4,252.88

13.