

**GRADE 11 ESSENTIAL
INVENTORY**

Name: _____

Date: _____

Students arrive to Grade 11 with a variety of mathematics skills.

This inventory is for **your own personal use**. Do not submit this one to the instructor. The questions are just a very *small selection* of typical problems from prior grades with which you should be somewhat familiar.

You are to complete it and see how much [extra] work you will need to do to catch up so as to readily follow the Grade 11 Essential Math Course. You are to always show the method you used to solve the problem. Simply 'stating' an answer is *not sufficient*, generally the answer is far less important than the method. Math is NOT numbers; it is patterns, and logic; and thinking! The ancients did math for thousands of years without stupid numbers!

For items on which you are fuzzy, you will want to **immediately** consult with the instructor.

- The **answers are given** of course at the end so you can assess *yourself* and your level of preparedness for Grade 11 Essential.
- If you are a numbers and formula type person, some selected formula are given at the end of this inventory. Me, I hate numbers; too many of them!

In four weeks the instructor will issue a similar inventory for a non-assessed submission to ensure you have made some progress in updating your prerequisite skills.

1. Knowing your *Multiplication Facts* (times tables) is critical for ready estimating , calculating, and checking arithmetic problems!

Do you know all your times tables up to 10 times 10 ??

Circle one response: Yes / No

If the answer was '**No**', **you need to learn them**, you have four weeks! Consult the instructor if you need assistance.

2. If 8 bananas cost \$6.40, then how much will 10 bananas cost?
[Show Work; use any method; not everything involves just numbers!!!]

3. Calculate how many minutes there are in three days.
[Show Work ↓; use any method!]

4. Solve the following proportions: [round any decimal answers to the nearest 0.01 as usual]

a. $\frac{7}{12} = \frac{x}{30}$

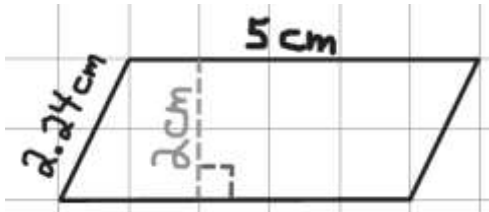
b. $\frac{6}{30} = \frac{5}{x}$

[SHOW WORK ↓; lots of room for thinking! You do not necessarily need stupid numbers to solve this!!]

5. Given that there are 1.6 kilometers in one mile, determine how many miles there are for a distance of 8.5 km.
[SHOW WORK or method ↓. Round to nearest hundredth decimal place]

6. Determine the **Perimeter** or **Circumference** (length around the outside) and the **Area** (number of square units inside the following shapes). Formulae are given at the end of this inventory for those who like formulae. Show your work, show your method, of course!

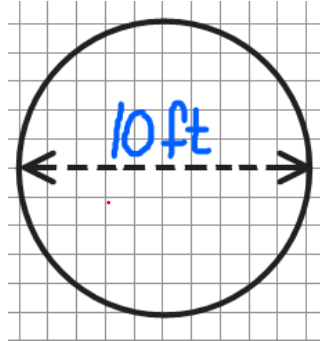
a. Parallelogram



Perimeter =

Area =

b. Circle



Circumference =

Area =

7. **Fractions.** Simplify the following as indicated. Show a manual calculation. Or do it on your calculator if really necessary. Pizzas are great way to do fractions too!

a. $1\frac{3}{8} + 2\frac{1}{4} =$

b. $1\frac{3}{8} * 4 =$

8. **Personal Finance.** Kyle worked 35 hours this week. His rate of pay is \$15.75 per hour. The income tax deducted from his pay check is 17% of his pay.

- a. determine Kyle's total pay before taxes ['Gross Pay']
- b. determine Kyle's pay after the income tax is deducted.

[Show yourself how you determined it! Show work ↓]

9. **Problem Solve.** Math is not just stupid numbers and arithmetic! There are lots of ways to solve problems: Logic, Lists, Tables, Solve a Simpler Version, etc.

Solve the following and demonstrate how you did it:

There are 4 people at a conference, everyone shakes hands with everyone. Determine the number of handshakes!

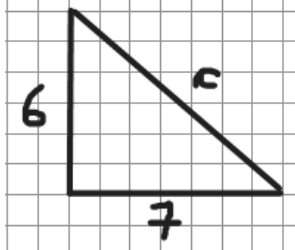
[Show your Method ↓]

State the answer if there were 7 people! '**State**' just means '*give the number*'! No need to show the calculation. If you could figure it out for 4 people then it is easy to figure out for any number of people!

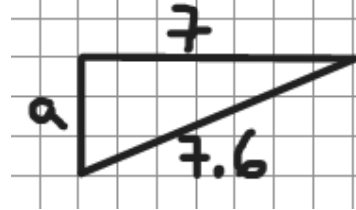
There would be _____ handshakes if there were 7 people.

10. **Triangles [Trigonometry]**. Triangles are by far the most important shape of all; every shape can be made up of right triangles. Try the few simple triangle problems below. As always, round all decimal answers to the nearest 0.01 units. And of course, show your method.

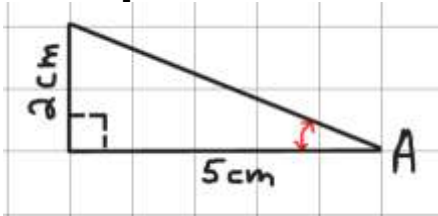
a. Determine length 'c'



b. Determine length 'a':

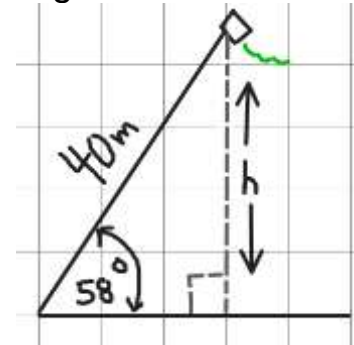


c. Determine the measure of the angle at corner A. [to nearest whole]



Use a calculator of course! Or if you like the way the ancients did it 3,000 years ago their tables are at the end. [show method ↓]

d. Karen is out flying a kite with her daughter. The kite is flying at the end of a 40 metre string! Karen measures the angle with her phone, it is 54° . Determine the altitude of the kite above the ground.



11. Calculate:

a. 6 hours 15 minutes subtract 3 hour 30 minutes

b. Add: 4 lb 9 oz plus 7 lb 10 oz.

CONCLUSION. This Inventory was a *very small sample* of typical questions with which you should be at least a bit familiar if you want to readily and easily succeed in Grade 11 Essential.

Answers are attached so you can ***privately self-assess!***
Some formulas and resources are attached at the back as well!

If a few of these are completely bewildering you will likely have a considerable amount of catch-up to do during the Grade 11 course. The instructor is unlikely to use class time to completely re-teach material from prior grades!

See your instructor immediately so you refresh these, important skills.

Your instructor will issue a similar Inventory in a few weeks so you can measure your progress in refreshing the pre-requisite skills necessary for Grade 11 Essential.

Some useful formulae, tables, and the answers!

If you are getting the same answers as below you are way ready for Grade 11 Essential. Should be a **breeze**!!

If you struggled with more than three of the problems, you likely have a little extra work in store and some after class time!

Useful Formulae:

Area of Parallelogram and Rectangle:

$$\text{Area} = \text{base} * \text{height} = b * h$$

[h is always perpendicular to b]

Area of a triangle [lol; just half a parallelogram!]

$$\text{Area}_{\Delta} = \frac{1}{2}bh$$

Pythagorean Theorem for a Right-Angle Triangle

“The sum of the squares on the two short sides of a right triangle equals the square on the hypotenuse side”

[2,600 years ago and today too!]

Or for those who like the formula: $c^2 = a^2 + b^2$

Circumference, C, of a circle

$$C = \pi * \text{diameter across the circle}$$

$C = \pi * d$ or $C = 2\pi r$; if using the radius length, r, from the centre of the circle.

Area of a circle:

$$\text{Area of a circle} = \pi * r^2; \text{ where 'r' is the radius}$$



Some Ancient Trigonometry Tables

The 3,000 year old tables your instructor used before we had calculators!!

Trigonometric Ratios

Angle [Degrees]	Sin	Cos	Tan
20	0.342	0.940	0.364
21	0.358	0.934	0.384
22	0.375	0.927	0.404
23	0.391	0.921	0.424
24	0.407	0.914	0.445
25	0.423	0.906	0.466
55	0.819	0.574	1.43
56	0.829	0.559	1.48
57	0.839	0.545	1.54
58	0.848	0.530	1.60
59	0.857	0.515	1.66
60	0.866	0.500	1.73

Answers [only] to the questions

Here I have just **stated the answer**. There are generally multiple ways to **solve** the problems, so I do not provide the full step-by-step solution; particularly since I have already solved identical problems multiple times in Grade 10!

If you are not getting these answers you will want to consult your instructor rather soon! Your success in Grade 11 will depend on it!

1. **Multiplication Facts.** Ensure you have your times tables nailed down. Math will be brutal throughout your life if you do not. And any 'trade': cook, carpenter, plumber; wedding planner, social worker, **mom, dad**, uncle, aunt,will need them!

2. \$8.00

3. 4,320 minutes

4b. 25

4a. 17.5

5. 5.31 miles

6a. 14.48 cm b. 10 cm²

6b. 31.42 feet b. 78.54 ft²

(*although technically 31.42 ft is more properly called 31 ft 5 in*)

7a. $3\frac{5}{8}$

b. $5\frac{1}{2}$



Answers and Formulae

8a. \$551.25 Gross b. \$457.54

9. a. 6 handshakes b. 21 handshakes

10a. 9.22 b. 2.96 c. 21.8014.. so: 22° d. 33.92 m altitude

11a. 2hr 45 min b. 12 lb 3 oz