Grade 12 Essential

Inventory

SOLUTION

clear out the cobwebs

MrF

What you should know(?) starting Grade 12 Essential

A very quick highlight of a *few* selected Grade 10 and 11 ideas with which students should be *familiar* with when starting Grade 12 Essential

" Pre-requisites "

If few of these selected examples look familiar or manageable, then the student will have some *additional challenge* in Grade 12 Essential *and teacher*
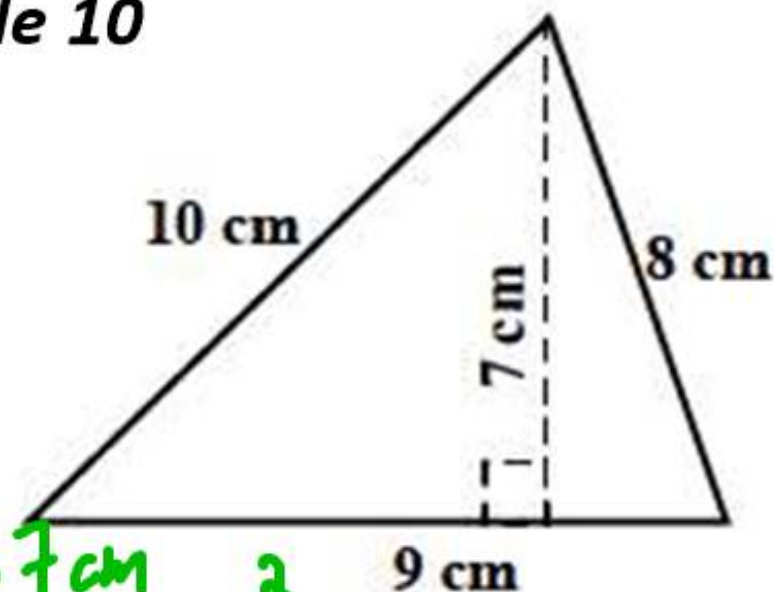
Run this movie

Pause, rewind, it if you need

These are a few of the skills; many of which you should be familiar

1. The area of the triangle is:

   a. 27 cm

   b. 34 cm²

   c. 31.5 cm²

   d. 63 cm²

$$A_D = \frac{1}{2} \cdot b \cdot h$$

$$A = \frac{1}{2} \cdot 9\,cm \cdot 7\,cm$$

$$A = 31.5\,cm^2$$

10 cm   8 cm   7 cm   9 cm

2. If Jason goes to work at 08:45 and leaves work at 16:15 and has an unpaid 30 minute lunch break; for what duration of time does he get paid?

   a. 7 hours

   b. 5 hours 45 minutes

   c. 6 hours 15 minutes

   d. a full eight hour shift

$$\begin{array}{r} 16:15 \\ -\ 8:45 \\ \hline 7:30 \\ -0:30 \\ \hline 7:00 \end{array}$$

$$28\text{ft} \cdot \frac{1 \text{ m}}{3.28 \text{ft}} = 8.53 \text{ m}$$

Grade 10

$$1\text{m} = 3.28\text{ft}$$

3. 28 feet is the equivalent of this many metres:

   a. 85 cm   **b.** **8.53 m**   **c.** 91.84 m   **d.** 336 in

5. The length of side **a** is:

   a. ~~16.7 units~~

   b. 7.8 units

   c. ~~173 units~~

   d. **13.16 units**

Pythagoras!

$$c^2 = a^2 + b^2$$

$$15^2 = a^2 + 7.2^2$$

$$225 = a^2 + 51.84$$

$$-51.84$$

$$a^2 = 173.16 \quad ; \quad a = \sqrt{173.16}$$
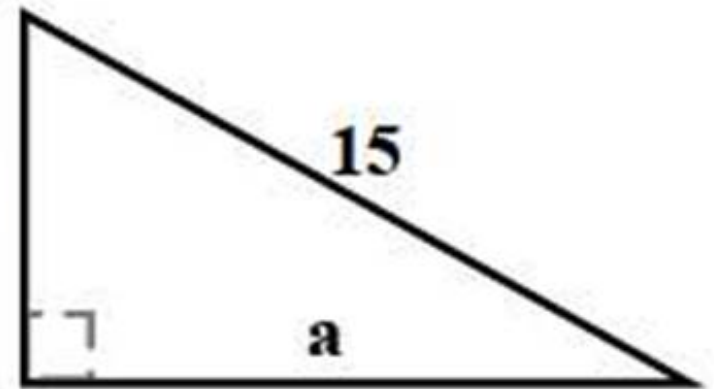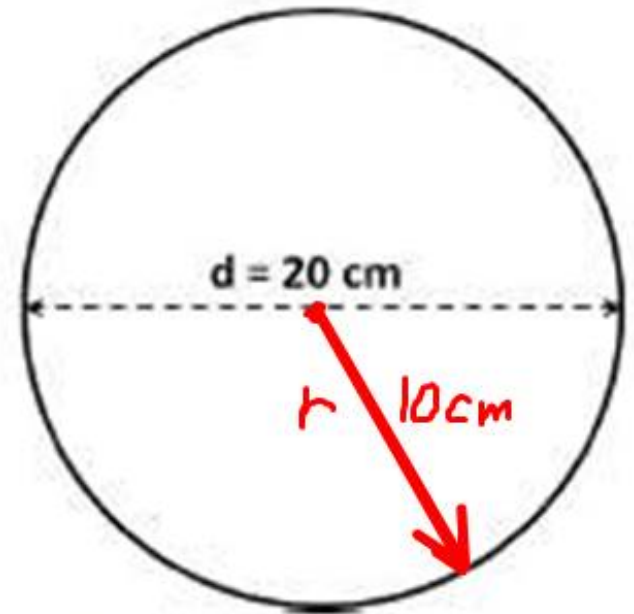
$$a \approx \sqrt{(173.16)}$$

$$13.1590$$

TLAR.

7.2   15   a

11. The area of this circle is approximately:

a. 10 cm

b. 314 cm² *(circled)*

c. 62.83 cm

d. 1257 cm²

d = 20 cm

r 10cm

$$A = \pi r^2$$

$$A = \pi \cdot (10 \text{ cm})^2 = \frac{\pi * 10^2}{314.1592}$$

$$= 314.16 \text{ square centimetres } (\text{cm}^2)$$

$$A = \pi r^2 =$$

Guess & Check !!

18. The sum of **two** numbers is **17** their **difference** is **7**. Find the two numbers.

↳ ie: subtract

a. ~~(9.5, 4.5)~~   b. ~~(9, 8)~~   c. ~~(14, 3)~~   d. (12, 5)

$9 + 8 = 17$ ✓ $14 + 3 = 17$ ✓   ✓ $12 + 5 = 17$

$9.5 - 4.5$ $9 - 8 = 1$ $14 - 3 = 11$ ✓ $12 - 5 = 7$

$= 3$

2. Evan gets paid for the following hours this week. He gets an hourly wage of **$16.75**. **Overtime** pay is calculated after **eight hours in a day**. His overtime pay rate is calculated as **time and a half**. Calculate his **gross** weekly pay.

Reg Pay $42.5 \text{ hr} \cdot \$16.75/\text{hr} = 711.88$ (Total Gross

O/T Pay $5.5 \text{ hr} \cdot (\$16.75/\text{hr} \cdot 1.5) = 138.19$ $850.07)

Weekday	M	T	W	Th	F	Sa	Su
Hours	4	8.5	9	10	10	6.5	0

Reg: 4   8   8   8   8   6.5   0 = 42.5

O/T: 0   0.5   1   2   2   0   = 5.5 hours

Grade 10

$1{,}000g = 1kg$

$1mile \approx 1.6km$

$1foot = 12inches$

5. Convert the following measurements as indicated:

a. 1.64 kg = _____ g	b. $1{,}620$ miles = _____ km
$\dfrac{xg}{1.64 kg} = \dfrac{1000g}{1 kg}$ $x = \dfrac{1.64 kg \cdot 1000g}{1 kg} = 1{,}640g$	$1{,}620mi \cdot \dfrac{1.6 \ km}{mi}$ $\boxed{2592 \quad km}$
c. 21 days = _____ mins	d. 5 ft 9 in = _____ in
$21 day \cdot \dfrac{24 hr}{1 day} \cdot \dfrac{60 min}{1 hr}$ $= \boxed{30{,}240 \ min}$	$5ft \cdot \dfrac{12 \ in}{1 ft} = 60 \ in$ $60 \ in + 9 \ in = \boxed{69 \ in}$

Grade 10

8. Determine the **Perimeter** *and* the **Area** of the following figures:
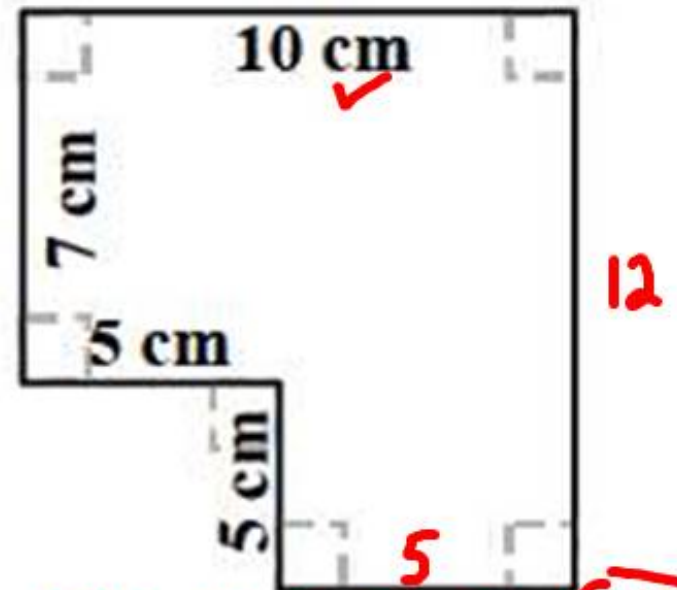
a. Parallelogram

$P =$ <u>40 units</u>

$2 \cdot 11 + 2 \cdot 9$
$= 40$

Square units →
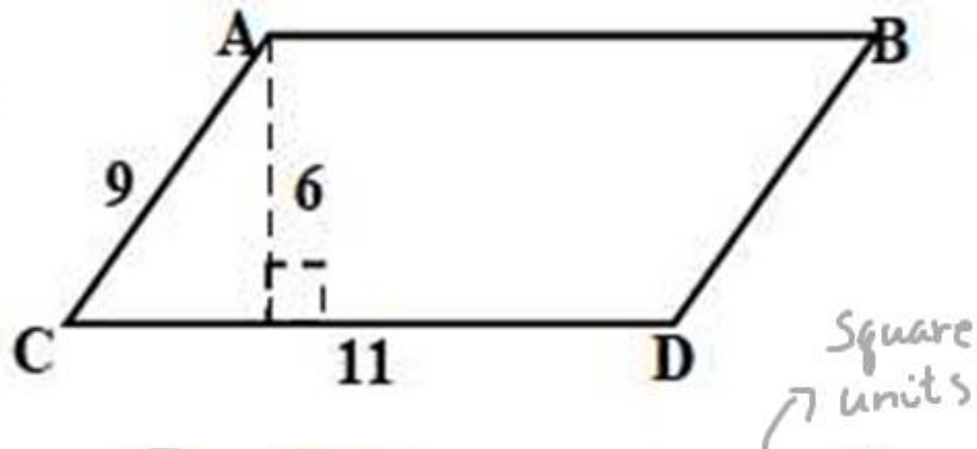
$A =$ <u>66 units^2</u>

$A = base \cdot height$
$= 11 \cdot 6 = 66$

b. Irregular rectilinear figure

10 cm ✔

7 cm

5 cm

5 cm

12

5

$P =$ <u>$10 + 12 + 5 + 5 + 5 + 7 = $ 44</u>

$A =$ <u>Whole area</u> $= 12 \cdot 10$
$= 120$ unit^2

$-$ cut out

$5 \cdot 5 = 25$

95 unit^2

14. Your job is to buy some pop for a community feast. Determine the unit price, in $ per litre, of each of these options:

a. the **2L** size bottles of pop **on sale** for $2.89

$$\$2.89/2L$$
$$= \$1.45/1L$$

b. the six packs of 355 ml cans for $2.49 ?

$$6 \cdot 0.355 l = 2.13 \text{ litres}$$

$$\frac{\$2.49}{2.13L} = \frac{\$1.17}{1L}$$

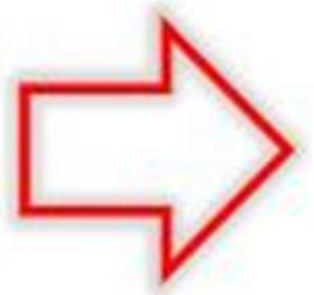c. the flats of 24 - 355 ml cans for $10.95 ?

$$24 \cdot 0.355 l = 8.52 \text{ litres}$$

$$\frac{\$10.95}{8.52 l} = \frac{\$1.29}{1 \text{ litre}}$$

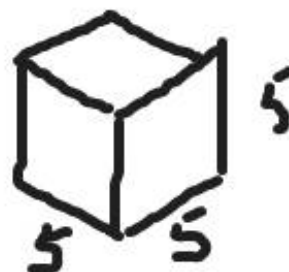*You would save money by buying all your pop in the 6 packs*

Now some Grade 11 Stuff

The **surface area of a cube** with edge length 5 cm is:

a. 15 cm²   (b)   150 cm²   c. ~~50 cm³~~ *Volume*   d. ~~10 ml~~ *Volume*

6 faces, each face is $25 cm^2$

$\therefore$ $150 cm^2$

4. What is the value of a $2,500 investment that earns compound interest monthly if it earns 7% APR for 10 years?

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

a. ~~$502.42~~   b. $4,918   c. $5,024 ✓   d. ~~$1,750~~

$$A = 2,500 \cdot \left(1 + \frac{0.07}{12}\right)^{(10 \cdot 12)}$$

```
A=  2500*(1+0.07/12)
    ^(120)
          5024.153442
```

$= \$5,024$

Grade 11

13. The slope of a line, often labeled 'm', is calculated using the formula:

a. $m = \frac{5}{9}(°F - 32)$

b. $m = tan^{-1}(rise)$

c. $m = \frac{rise}{run\ right} = \frac{\Delta y}{\Delta x}$

d. $m = cos^{-1}\left(\frac{a^2 + b^2 - m^2}{2ab}\right)$

14. The length of side **a** is:

a. 4.59 cm

b. 13.95 cm

c. 55°
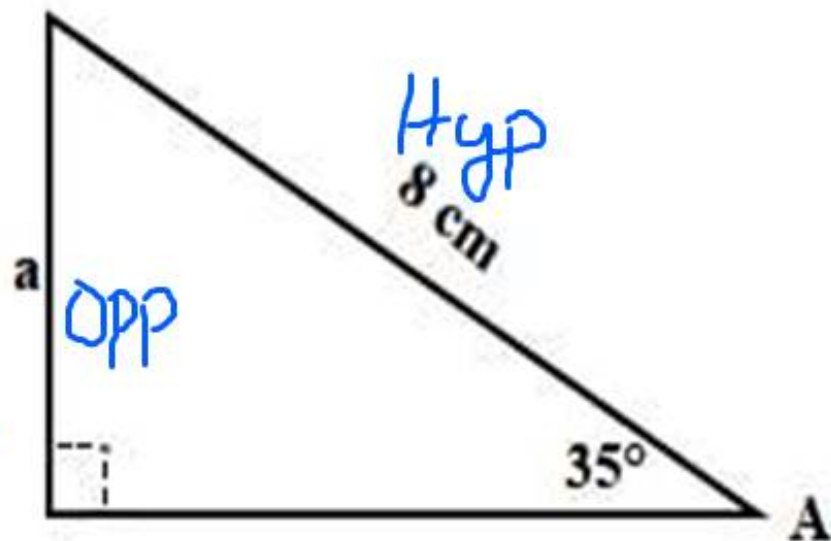
d. 280 cm

l.o.l

Hyp 8 cm

a OPP

35°

A

Grade 11

$\sin A = \frac{Opp}{Hyp}$

$\sin 35° = \frac{a}{8}$; $a = 8 \cdot \sin 35°$

$a = 4.59\ cm$

1. Kyle borrows $8,000 from a lending institution at an Annual Percentage Rate (APR) of **30%**. [A 'predatory' rate as they call it in the news]. The term of his loan is 5 years and he makes **monthly** payments. (use the table method; loan tables provided in class or on website)

    a. Calculate the amount of each monthly payment.
    b. Calculate the amount that Kyle pays back total.
    c. Calculate the total interest that he paid for the loan.

a) $\frac{\$32.35}{1,000} \cdot 8,000 = \$258.80$

b) $258.80 / \text{month} \cdot 60 \text{ months} = \$15,528.00$

c) $\$15,528 - \$8,000 = \$7,528.00$
    TOTAL AMOUNT   Principal

Grade 11

MONTHLY LOAN PAYMENT TABLE FOR A LOAN O

Annual Rate	1 Year Monthly	2 Years Monthly	3 Years Monthly	4 Years Monthly	5 Years Monthly	1 Yea Mon
2%	$84.24	$42.54	$28.64	$21.70	$17.53	$
3%	$84.69	$42.98	$29.08	$22.13	$17.97	$
4%	$85.15	$43.42	$29.52	$22.58	$18.42	$1
5%	$85.61	$43.87	$29.97	$23.03	$18.87	$1
14%	$89.79	$48.01	$34.18	$27.33	$23.27	$15
16%	$90.73	$48.96	$35.16	$28.34	$24.32	$16
18%	$91.68	$49.92	$36.15	$29.37	$25.39	$18
20%	$92.63	$50.90	$37.16	$30.43	$26.49	$19
25%	$95.04	$53.37	$39.76	$33.16	$29.35	$22
30%	$97.49	$55.91	$42.45	$36.01	$32.35	$26
35%	$99.96	$58.52	$45.24	$38.97	$35.49	$30

6. Calculate the **Surface Area** and the **Volume** of this entire cylindrical object.
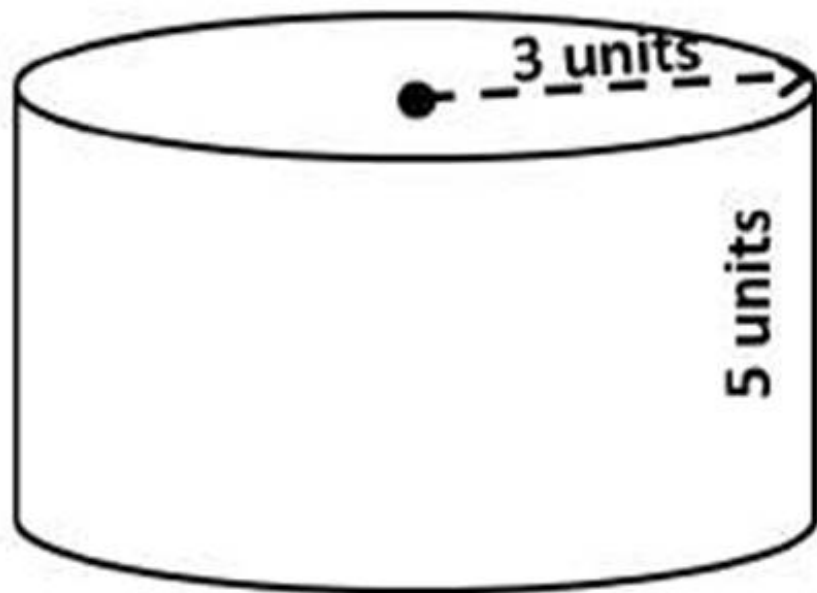
SA: ___150.80___ square units
Volume: ___141.37 cubic units___

$$SA_{cyl} = 2\pi r^2 + 2\pi rh$$
$$= 2\cdot\pi\cdot 3^2 + 2\cdot\pi\cdot 3\cdot 5$$
$$= 18\pi + 30\pi = 48\pi = \boxed{150.80 \; unit^2}$$

$$V = \pi r^2\cdot h = \pi\cdot 3^2\cdot 5 = 45\cdot\pi = \boxed{141.37 \; unit^3}$$

$$SA = 2\pi r^2 + 2\pi rh$$
$$V = \pi r^2\cdot h$$

3 units

5 units

Grade 11

10. Calculate:

4

a. the measure of length **b**

length **b** = $\boxed{7.76 \text{ cm}}$
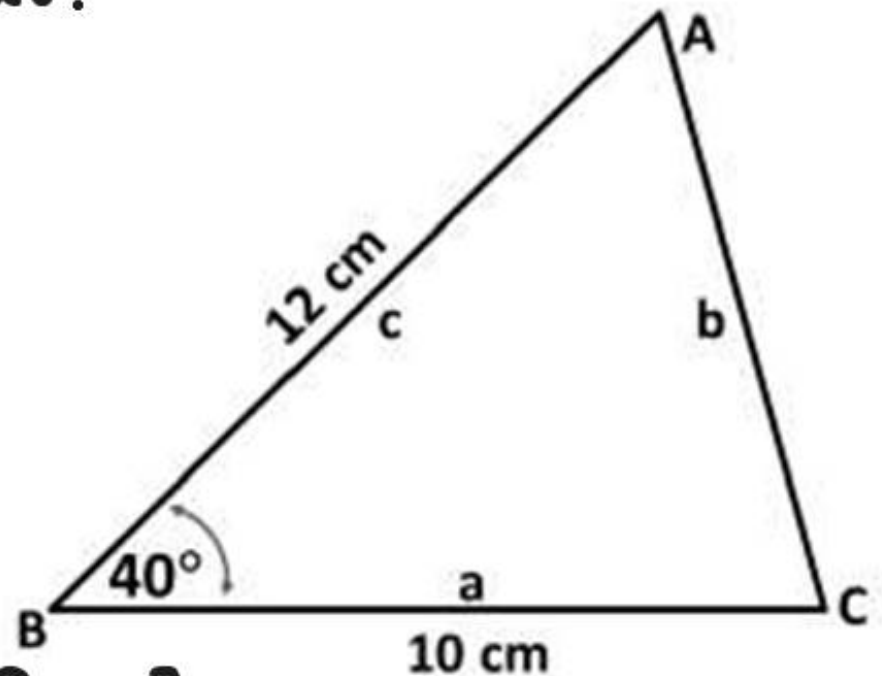
b. The measure of angle **A** now that you have all 3 sides

$56°$

$\angle A =$ _____

(nearest whole °)

Cosine law!

$b^2 = a^2 + c^2 - 2 \cdot a \cdot c \cdot \cos \angle B$

a) Determine length b:

$b^2 = a^2 + c^2 - 2 \cdot a \cdot c \cdot \cos \angle B$

$b^2 = 10^2 + 12^2 - 2 \cdot 10 \cdot 12 \cdot \cos 40°$

$b^2 = 10^2 + 12^2 - 2*10*12* \cos(40)$

60.14933365

$\sqrt{(Ans)}$

7.755600148

b) $\angle A = \cos^{-1}\left(\dfrac{b^2 + c^2 - a^2}{2 \cdot b \cdot c} \right)$

$\angle A = \cos^{-1}\left(\dfrac{7.76^2 + 12^2 - 10^2}{2 \cdot 7.76 \cdot 12} \right)$

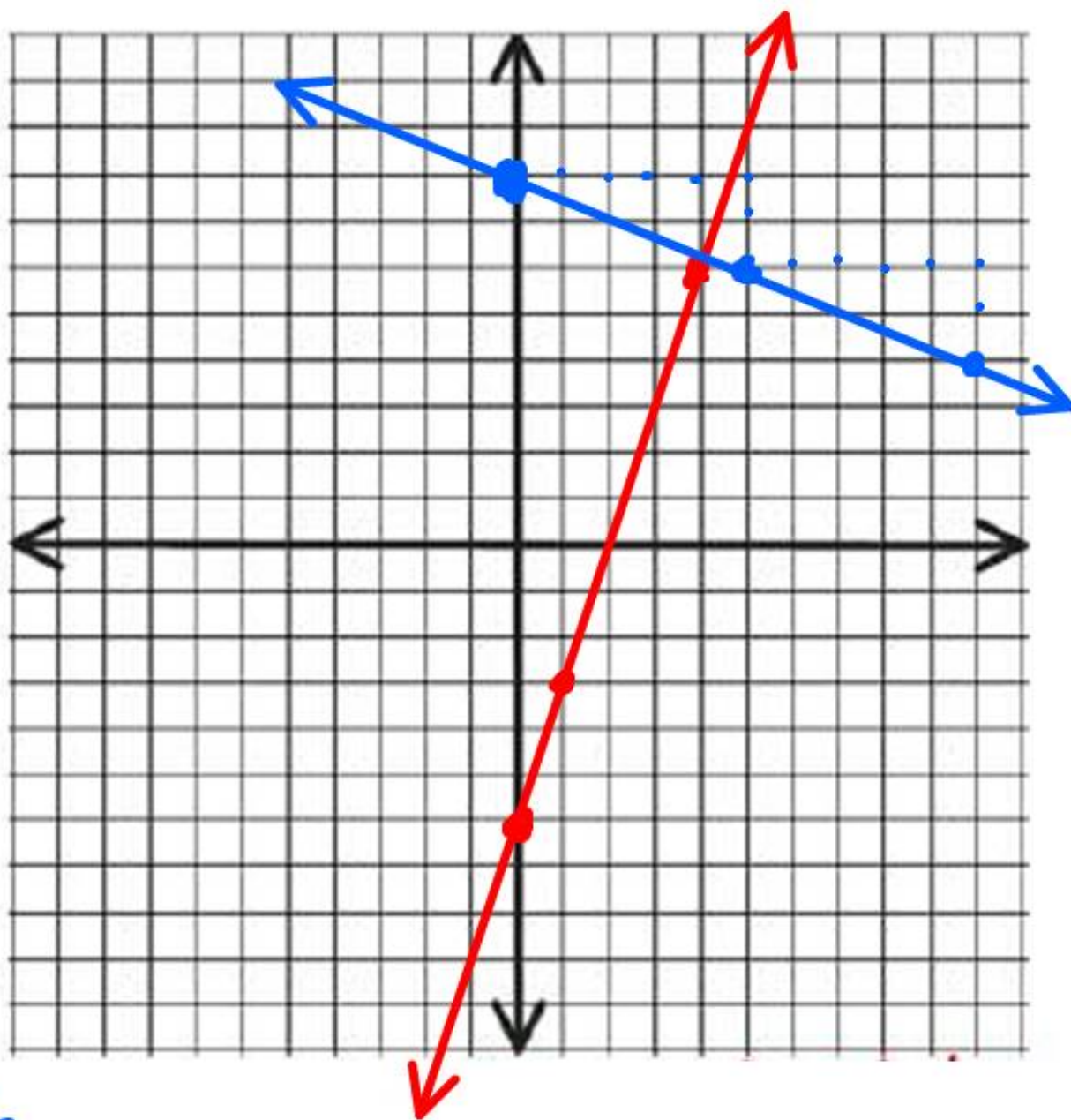$\cos^{-1}((7.76^2 + 12^2 - 10^2)/(2*7.76*12))$

55.97271567

11. Using either the t-table method [make your own] or the slope and intercept method **Manually Graph** and label the two lines given by:

A. $y = 3x - 6$

x	y
0	-6
1	-3
4	6

4

B. $y = -\dfrac{2}{5}x + 8$

↗ slope

↑ intcpt

Grade 11

That is a quick snapshot of many of the Grade 10 and 11 outcomes, many of which you should hopefully be loosely (?) familiar with.

All set for Grade 12!!!

Some?

Hopefully much of this looked a bit familiar

otherwise some extra challenge!!