MATH20S (GRADE 10)
EXAM PRACTICE

Name: _____
Date: _____

Instructions:

Show work for best mark
Keep answers exact whenever possible, otherwise Round answers to nearest two decimal places.
You may use your two - page course reference notes
Calculators are permitted. A unit conversion sheet will be provided

Multiple Choice (Choose one best answer. Circle the letter of the correct response)

1. Evaluate for x = –1, y = 5: $(y - x^3)^2$

a. $8\sqrt{3}$ b. 13.8 c. 16 d. 36

2. A line parallel to the line **y = 4x + 4** is:

a. y = 4 b. y = 4x – π c. y = 2x + 2 d. y = x

3. The point **(0, 7)** is on the line:

a. y = 3x – 7 b. y = 5x c. x = 7 d. y = x + 7

4. The slope of the line that goes through the Points $\mathbf{P_1(4, -5)}$ and $\mathbf{P_2}$ **(–2, 7)** is:

a. $-\frac{5}{6}$ b. $-\frac{2}{5}$ c. – 2 d. Horizontal

5. Simplify: $\frac{(3x^2y^3)^2}{3x^3y^5}$

a. 1 b. $2x$ c. 3xy d. $\frac{9x}{y^2}$

6. A simpler exact expression for $\frac{3\sqrt{8}}{6\sqrt{2}}$ is:

a. 1 b. 0.5 c. $\sqrt{4}$ d. $3\sqrt{6}$

7. The **volume** of a **sphere** that has a diameter of **6 ft** is:

a. 904.8 ft^3 b. 90.4 ft^2 c. impossible d. none of these

8. **52** feet is the same as how many **metres**?

a. 15.8 m b. 12 cm c. 50 ml d. 49.2 m

9. The distance between the two points **(7, 7)** and **(0, 4)** is:

a. $\sqrt{58}$ units exactly b. 6.7 units c. (3.5, 5.5) d. None of these

10. The corner, **A**, of a triangle has a tangent that is equal to **3.00** (ie: *tan(A) = 3.00*). What is the **measure of the angle A**?

a. 3° b. impossible c. 0.052° d. 71.57°

11. If **three** jars of pickles plus **four loose** pickles found under the couch make a total of **52 pickles** altogether; how many pickles are there in each jar?

a. 30 b. 62 c. Unknown d. 16

12. There is an isosceles triangle with sides of length **8, 8, 10**. Which triangle is '*similar*'

a. 3, 4, 5 b. 8, 20, 26 c. 16, 16, 20 d. impossible

13. If **3t + 8 = 22** what does '**t**' equal?

a. 0 b. 14/3 c. 4 d. none of these answers

14. A **square pyramid** fits perfectly inside a square prism of the same height. The volume of the square pyramid is **80 cm^3**. What is the **volume** of the **square prism**?

a. 26.7 cm^3 b. 240 ml c. 0.24 m^3 d. $4\pi r^2$

FREE RESPONSE questions. Show work for best marks.

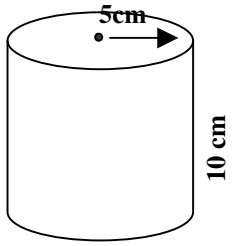
1. Factor the following polynomials:

a. $2x^2y^2 + 4xy^2 + 4y$

b. $x^2 + 12x + 35$

c. $9x^2 - 9$

2. What is the V**olume** and **Surface Area** of the **cylinder**:



3. Simplify the exponential expressions so that only positive exponents are used:

a. $\frac{7}{\sqrt{7}}$ b. $\frac{3x^2y^3}{4x^5y^0}$ c. $\left(\frac{6^2 * \sqrt{7}}{4}\right)$

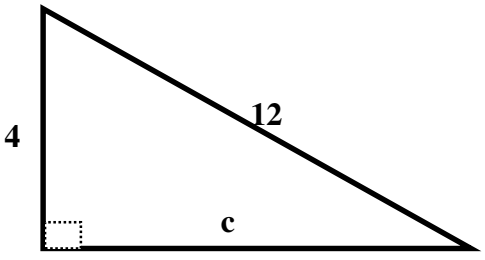
4. Factor completely:

a. $\mathbf{x^2 - x - 20}$ b. $\mathbf{16x^2y^2 - 81}$ c. $\mathbf{4x^2 + 2x}$

5. Simplify:

a. $\left(\frac{1}{3}\right)^{-2}$ b. $\left(\frac{15x^2z^3}{(3z)^{-2}}\right)^0$ where x =2 and z = -5 c. $9^{-1} * \left(\frac{1}{9}\right)^{-1/2}$

6. Find the length of **side c**:

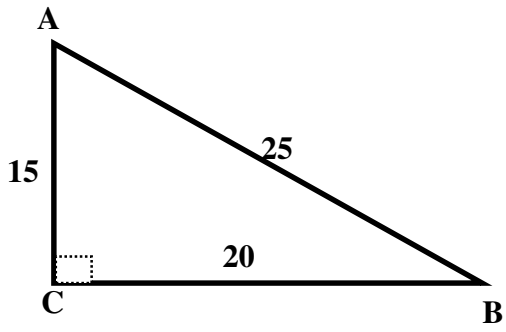


7. Find the following:

a. **sin(∠B):**

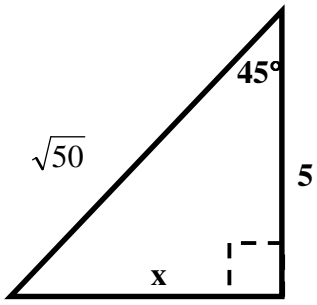
b. **cos(∠B):**

c. **tan(∠B):**

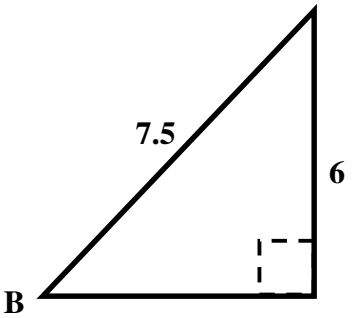


d. **measure of ∠B** (ie: $m\angle B$) in degrees:

8. Find the length of **side x**: (exact preferably)

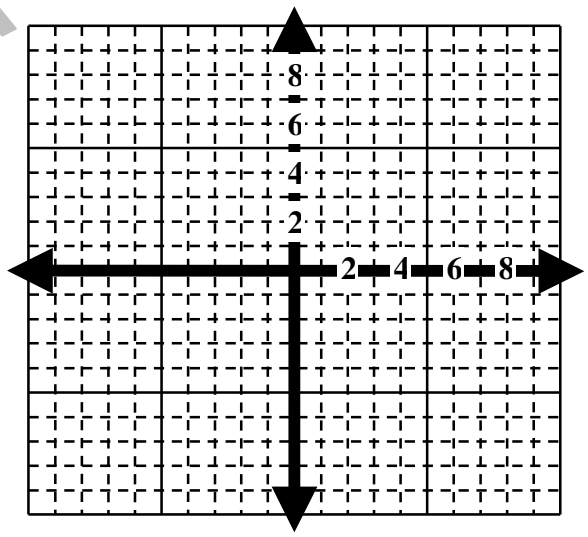


9. Find the measure of **angle B** in degrees:



10. Please graph and label:

a. Graph the line $y = -\frac{2}{3}x - 3$



b. Graph the line **y = –8**

11. Find the equation of the line that runs through the two points **P_1(0, 6)** and **P_2(6, 4)**.

12. Find the equation of the line that has a slope, **m,** of **4** and runs through the point **(0, 4)**.

13. Find the equation of the line that is **parallel** to the line **2x – 3y = 12** but runs through the origin **(0, 0)**.

14. Convert the following measures to the indicated units:

a. 5.6 cm = _____ in b. 22 ft = _____ m c. 65.5kg = _____ lbs

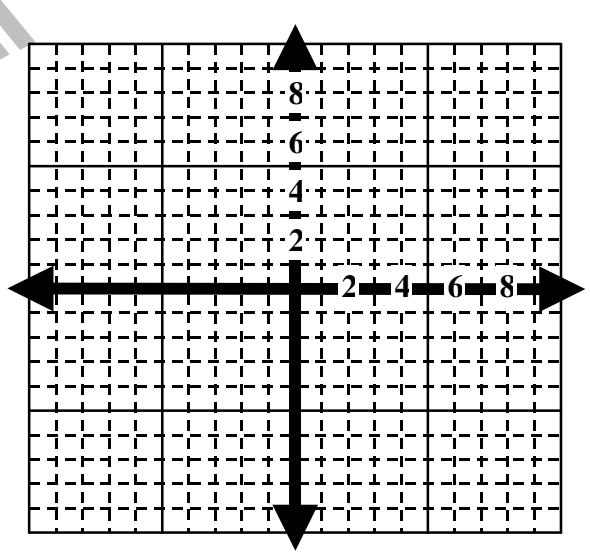
d. 3 square feet = ___ in^2 3.78 litres = _____ cm^3 355 cm^3 = _____ in^3

15. If the volume of a fish tank a rectangular prism is 16.5 litres and the height is 80 cm, the width is 40 cm, what is the length of the fish tank.

16. Solve the system of linear equations by graphing:

$2x + 3y = 9$

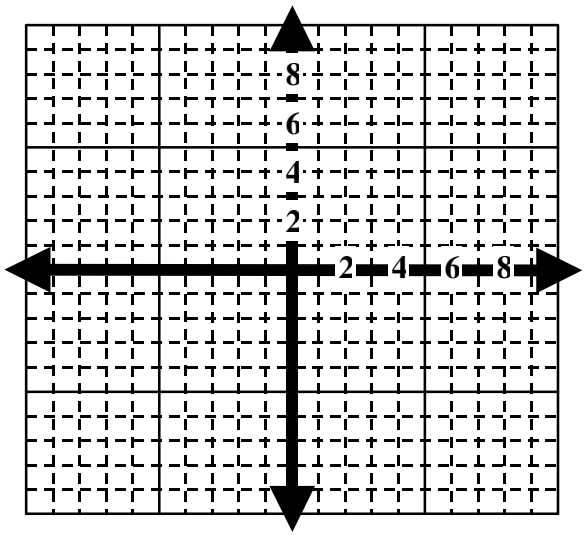
$x - 5y = -15$



17. Solve the system of linear equations by graphing:

$\frac{1}{2}x - y = 7$; and

$2x + y = 5$



18. Solve the system of linear equations by substitution (show work):

$2x + 3y = 9$ and **$x - 5y = {}^{-}15$**

19. Solve the system of linear equations by substitution (show work):

$\frac{1}{2}x - y = 7$ and $2x + y = 5$

20. Solve the system of linear equations by elimination:
(show work)

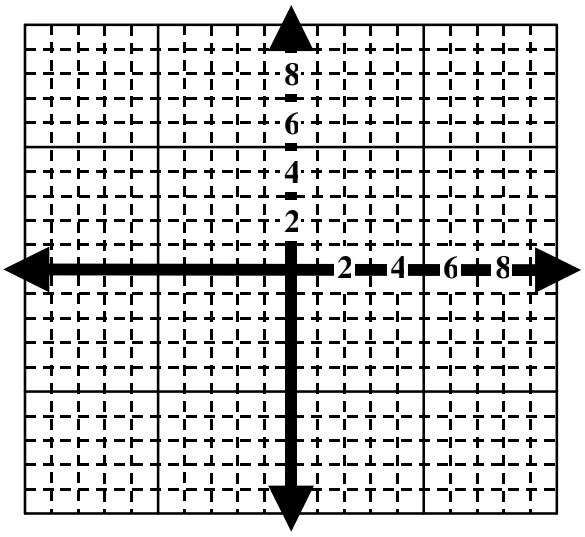
$\frac{1}{2}x - y = 7$ and $2x + y = 5$

21. Solve by elimination (show work):

3x + y = 10 and **y = 4**

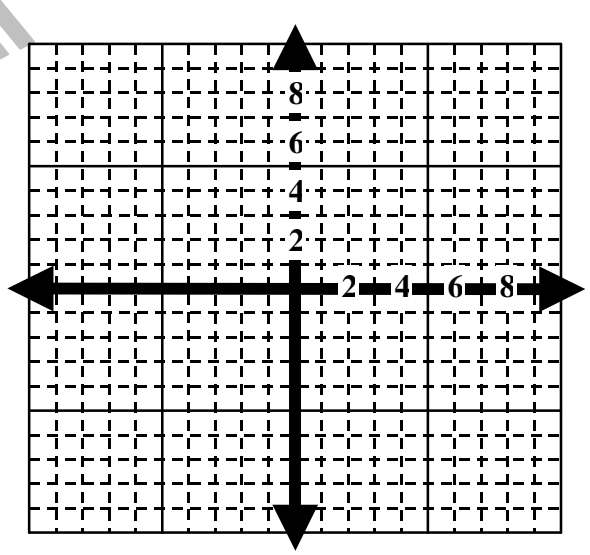
22. Solve the system using any method (use a graphing tool if you want):

2x + y = –8 and **y = 6x + 24**



23. Solve the system using any method (use the graphing calculator if you want):

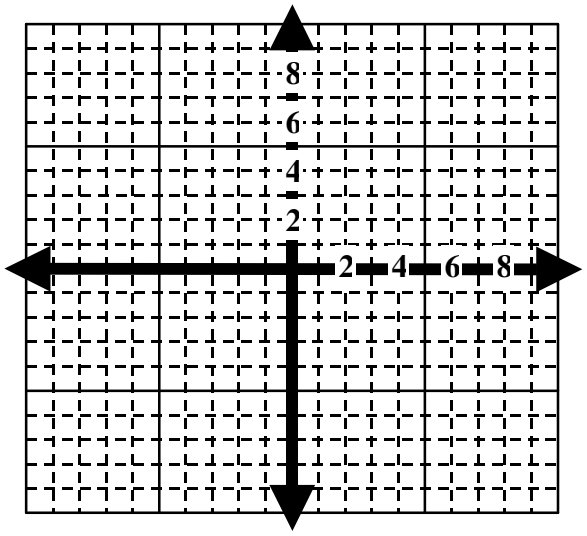
$\frac{1}{2}x+\frac{1}{3}y=2$ and $\frac{3}{4}x+\frac{3}{5}y=\frac{33}{10}$



24. Solve by any method:

2x – y = 4; and

y = 2x – 3



25. Simplify (exact whenever possible), rounded decimals to three places accepted for half marks and if you do not plan on Pre-Calculus!

a. $\sqrt{72}$

b. $\sqrt{54}+2\sqrt{96}$

c. $\sqrt{18}*(\sqrt{72}+3\sqrt{98})$

d. $\dfrac{4\sqrt{196}}{\sqrt{8}}$

26. What is the Volume and Surface Area of the square Pyramid: