Final exam review

A. Algebra Review

1. $(-7)^2$
2. -5^2
3. $45 + (3 \times 4 - 5)$
4. $30 \div (5 \bullet 3 - 9)$
5. $\left[3 - (2 + 4(5 - 3) + 4)\right]$
6. $(5 - 2)(7 - 11)$
7. $3\frac{2}{3} + 5\frac{5}{3}$
8. $4\frac{1}{3} - 2\frac{2}{5}$
9. $1\frac{2}{7} \bullet 4\frac{3}{5}$
10. $4\frac{2}{3} \div 1\frac{4}{12}$
11. $\frac{-20 - (-3)[(-2)^2 - (-2)^3]}{-2(3) + 2}$
12. $x^2 \bullet x^4$
13. $x^3y^4 \bullet 5\,x^4y^2$
14. $(3x^2y)^3$
15. $(3xy^2)^2(2x^3y)^3$
16. $\frac{4x^3}{2x}$
17. $\frac{(3x^3y^2)^2}{(3^2x^4y)}$
18. $4x + 7x - 12x$
19. $3x^2 - 2x + 6x^2 + 3x$
20. $(5x + 3) - (2x + 4)$
21. $(7xy + 4x^2 - 5y) - (2x^2 + 5xy - 4y)$
22. $2(3x + 5)$
23. $-6x(2x + 3)$
24. $(3x - 1)(2x + 4)$
25. $(3x - 1)^2$
26. $\frac{12x^3 + 6x - 9x^2}{3x}$
27. $(3a^2b - 6a^2b^2 + 9a^2b^3) \div (-3a^2b)$

B. Problem Solving:

1. Translate the following into into an algebraic expression
   a) 6 less than 3 times a number
   b) 12 more than ½ a number

2. Translate the following into an equation:
   a) The sum of a number a 6 is 20.
   b) The difference between a number and 12 is 40.
   c) The product of 3 and a number is 24
   d) Four times a number increased by 6 is equal to 9

3. Solve the following equations:

   a) $5x = 15$
   b) $2x - 6 = 12$
   b) $3x - 5 = 2x + 6$
   d) $9y + 6 = 4y + 2$
   e) $3/5x = 6$
   f) $2(x + 6) = 4(3x - 5)$

g) 3.5x - 2.7 = 4.4x + 2.8 h) -.2(-3.1x + .46) = 1.9

i) $2/3x + 1/2 = 5/4$

4. Solve the following problems:

1. When 12 is subtracted from a certain number the difference is 20. What is the number?
2. When 8 is added to 4 times a certain number , the result is 23 more than the number. What is the number?
3. The sum of two consecutive integers is 15. What are the integers?
4. The sum of two odd integers is 28. What are the integers?
5. The perimeter of a rectangle is 64 m. The length is 8 more than the width. What is the length of the rectangle?

C. Graphing Inequalities

1. $3x - 5 \geq 13$ 2. $-2x + 3 < 11$

3. $-4 < 2x + 1 < 9$

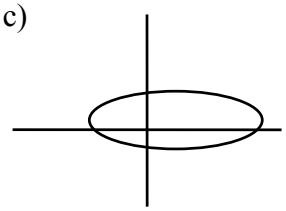
D. Using Formulas

1. Solve for h: $V = 4/3\pi r r^2 h$ 2. Solve for n: l = a + (n - 1) d

E. Coordinate Plane

1. Construct and label the graph of {(-2, 3), (4, 6), (-5, -7), (-5, 3), (4, -6)}
2. In which quadrant is the point (-2, -3)?
3. Identify the following as a function or a relation?

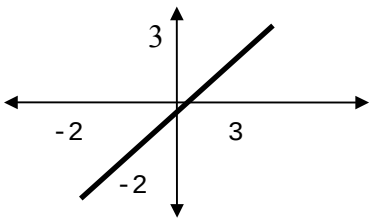
a) {(-2, 3), (-2, 4)} b) {(3, -2), (4, -2)} c)

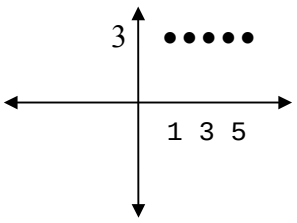


d) y = 5x - 2 e) x = y^2

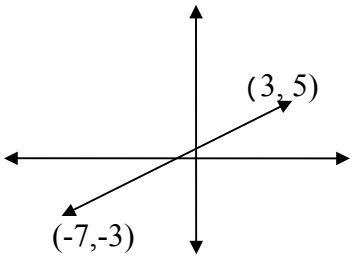
e) State the domain and range of the following functions:

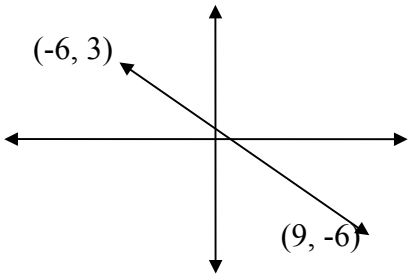
1. {(2, 3), (4, -2), (7, 8)}
2. {(x, y)| y = x + 3, x ∈ { -2, -1 , 0 , 1, 2}}
3. 4.





f) Determine the slope of the following:
   1. line joining the points (3, 4) and (-3, 8)
   2. line with equation 3x + 4y = 7
   3. line parallel to a line with slope of -2/3
   4. line perpendicular to a line with slope of 5/4
   5. 6.





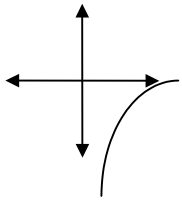
   6. slope of a horizontal line? A vertical line?

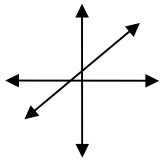
g) Determine the x and y intercepts for the following equation: 5x + 6y = 30
h) Determine the slope and the y-intercept of the equation 7x - 3y = 12
i) Graph the following equations using the indicated method:
   1. 2x + y = 6 (using a table of values)
   2. 3x + 4y = 12 (using x and y intercepts)
   3. 3x + 2y = 6 (using slope intercept method)
j) Determine the equation of a line given:
   1. m = 2, b = 6
   2. m = -3/4 , (0, 4)
   3. m = ¾, (4, 5)
   4. points (3, 4) and (2, -5)
   5. through (1, -5) and parallel to y = 5/4x - 1
k) Scatter plots
   1. Draw a scatter plot of the following data:

Time (h)	0	1	5	8	10	13	18
Number of bacteria	20	67	120	190	230	320	520

   2. Draw a line of best fit
   3. Determine the linear regression equation and compare to your answer.

F. Variation
   1. Which of the following represents a direct variation?
      a) 3x = 4y b) 5xy = 15 c) d)





   2. What is the constant of variation in the equation 3y = 6x?
   3. Solve:

a) $\frac{4}{7} = \frac{x}{12}$ b) $\frac{6}{5} = \frac{18}{x}$ c) if x varies directly as y and x = 2 when y =

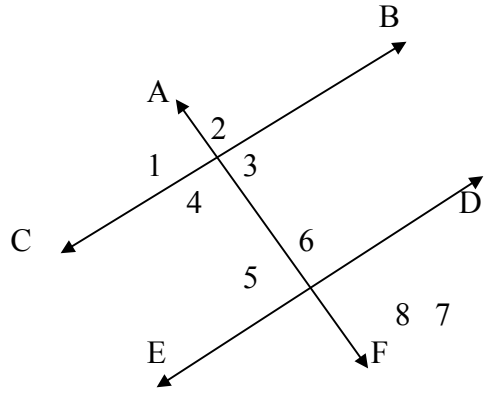
8, find x when y = 16.

4. The cost of parking at a meter in Saskatoon varies directly as the amount of time you are parked at the meter. If you paid $6.05 for five and a half hours, how much would you three hours cost?
5. Which equation represents a partial variation?
   a) y = 4x + 6 b) y = 3x c) 4x + 5y = -14
6. The toll charge to use a toll bridge is based on a constant fee for vehicle plus $0.85 per person. The charge for a van with nine people is $26.00. What is the equation that represents the total charge and what was the charge for the van?

G. Geometry:

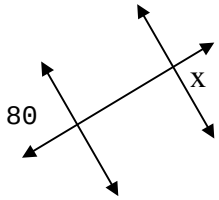
1. Draw the symbol representation for a point, line, segment, ray. Angle

2. Identify from the diagram
   a) transversal
   b) corresponding angles
   c) adjacent angles
   d) supplementary angles
   e) alternate interior angles
   f) alternate exterior angles
   g) same side interior
   h) acute angle
   i) obtuse angle
   j) vertically opposite angles

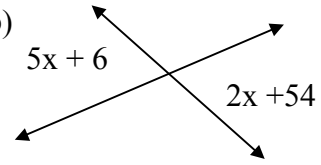


3. Determine the measure of the indicated angle:

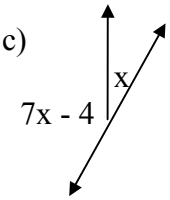
a)



b)



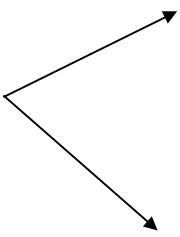
c)



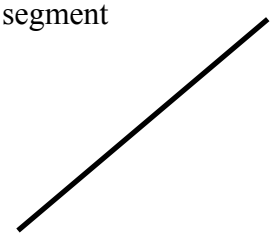
   d) The measure of one complementary is 10 less than 4 times the other angle. Find the measure of each angle.
   e) Two supplementary angles have measures of (5x - 12) and (2x -18). Find the measure of each.

I.. Constructions:

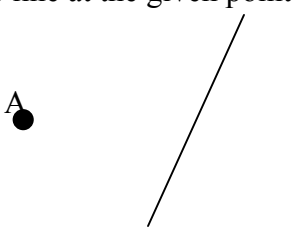
a) Bisect the given angle



b) Bisect the given line segment



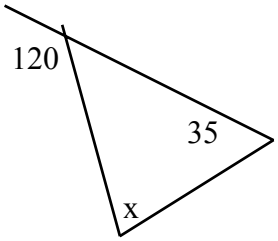
c) Draw a perpendicular to the line at the given point



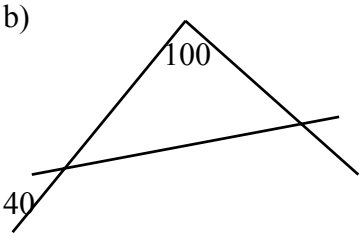
J. Polygons

1. Draw a diagram for each of the following: isosceles triangle, equilateral triangle, right triangle, square , parallelogram. obtuse triangle, rectangle, trapezoid, pentagon, rhombus, isosceles trapezoid, scalene triangle, non-convex polygon.
2. Determine the sum of the interior angles in a regular polygon of 8 sides, of 12 sides and of 24 sides.
3. Determine the number of sides of the polygon if the sum of the interior angles is 2160 degrees, 2700 degrees, and 4140 degrees.
4. Determine the size of each interior angle if the sum of all the interior angles is 3600 degrees, and 5220 degrees.
5. Determine how many diagonals can be drawn in a five sides figure, a 7 sided figure and a 10 sides figure.
6. Determine the size of the central angle is regular polygon of 6 sides, of 10 sides and of 14 sides.
7. The sum of all the exterior angles in a regular polygon is always _____
8. Determine the size of each exterior angle of a 8 sides polygon, a 12 sides polygon and of a 20 sides polygon.
9. Solve for "x"

a)



b)

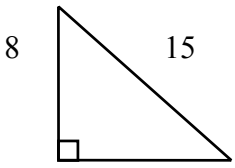


K. Right Triangles

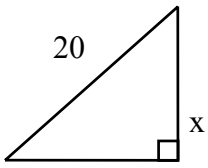
a) Do the following dimensions represent a right triangle?
   1) 12, 16, and 20 2) 20, 30 and 40

b) Find the missing dimension using the right triangle theorem

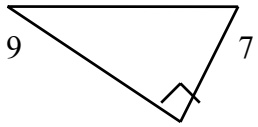
1)



2)

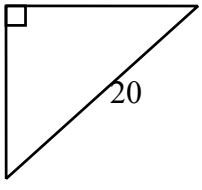


3)

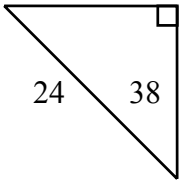


c) Use Trig functions to determine the missing parts of the following triangles

1)



2)



3)