Cycle 3 Review

1. Simplify the following.

$8x + 2y - 5 - 6x + y - 10$	$(3x^2 - x + 10) - (x^2 + 8x - 6)$
$2(a+b) - 5(2a-7b)$	$-2x(5x^2 + x - 4)$
$y(2y-5) + (y^2 + 15y - 3) - 2(5y+6)$	$(p+q) - (p+7q-3) + 2p - 3(q-4)$

Evaluate 1 (a) when x=-1 and y=3.

2. Simplify then evaluate when a=2 and b=-5.

a) $\frac{(a^3 b)}{(a^2 b)}$	b) $\frac{(2a^4 b^5)^3 (ab)}{(a^5 b^8)^2}$

3. Mike wants to join a ski club. He's considering the following options:
   - Option A: $50/day with no registration fee
   - Option B: $40/day plus a $100 registration fee.

a) Write an equation to represent the cost of each option.

b) Graph both lines on the same grid.

c) What is the point of intersection? What does it mean?

d) Solve algebraically.

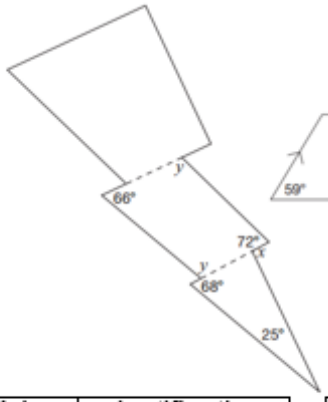
4. The cost of a wedding reception is $700 to rent the hall and $80 per person. The cost of a different hall is $150 and $100 a person. Model these equations to find when one hall would be more expensive than the other.

5. a) Sketch $3x - 5y = 15$ by finding the x and y-intercepts.

b) Graph $3x + 12y - 12 = 0$ using intercepts and slope/y-intercept method.

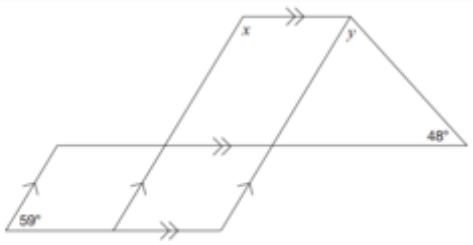
6. Solve for the unknowns and give full justification.

a)



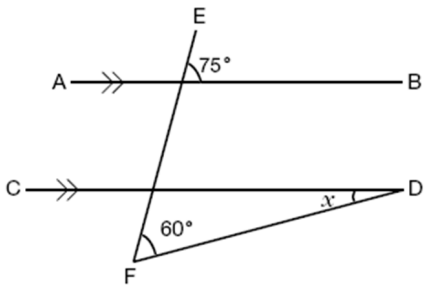
Value	Justification
x	
y	

b)

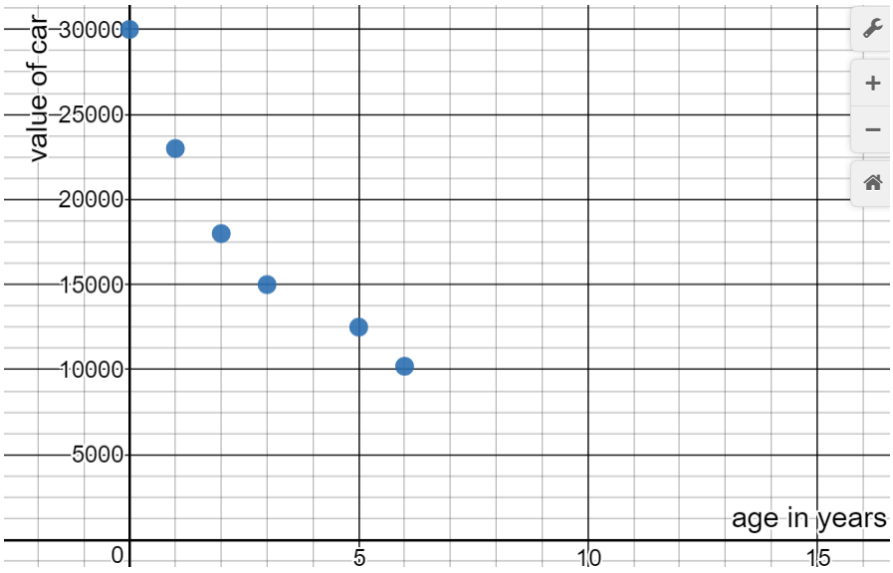


Value	Justification
x	
y	

7. What is the value of x.



8. a) Draw a line of best fit and state an equation to represent the relationship between cost and age of a car



b) Use your **graph** to estimate how old a car is that is worth $12000.

c) Use your **equation** to find exactly how old a car is that is worth $12 000.

9. State the **slope** parallel and perpendicular perpendicular to $y = 4 - \frac{3}{2}x$

Parallel **slope=**

Perpendicular **slope=**

Equation of line parallel to $y = 4 - \frac{3}{2}x$:

10.State the **slope** parallel and to y=6.

Parallel **slope=**

Perpendicular **slope=**

Equation of line parallel to $y = 6$:

11. State the equation of a line perpendicular to $y = 5x - 1$ and the same y-intercept as $y = 7x + 5$

~~12. Cereal is packaged in boxes that are rectangular prisms. The box contains 5564 cm^3 of cereal. What dimensions for the box will use the least amount of cardboard?~~

~~13. Determine the dimensions of the cylinder, with a maximum volume, if it has a surface area of 1400 cm^2.~~

~~14. A cylinder has a volume of 900cm^3. What dimensions will give the smallest surface area?~~

~~15. You wish to build a rectangular prism with 32 ft^2 of plywood. What is the volume of the biggest prism you can build?~~

16. Solve the following equations. Show your work.

a) $2x + 5 = -9$

b) $2x - 6 = 3x - 12$

c) $4(x - 2) = 16$

d) $2(5c + 2) - 2c = 3(2c + 3) + 7$

17. A rectangle has a perimeter of 96 units. What dimensions produce the rectangle with the maximum area? What is the area?

18. A rectangle has an area of 64 m^2. What are the dimensions with the smallest perimeter?

19. A rectangle has an area of 120 m^2. What are the dimensions with the smallest perimeter?