

Algebra Review

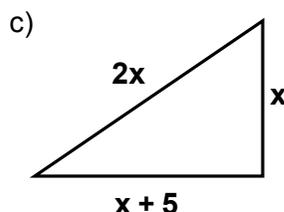
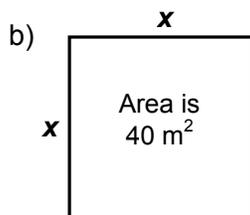
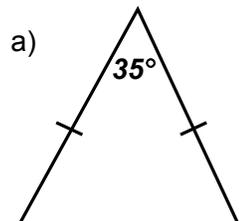
Topics we have done with algebra:

1. Angles
2. Perimeter
3. Area
4. Linear Relations

Ideas we have learned with algebra:

- A. Modeling (equations, expressions)
- B. Simplifying
- C. Solving (opposite operations)

Examples: model, simplify and solve (if possible), each of the following situations:



d) A plumber charges \$70 upfront as well as \$32 per hour.

Comparing: fill in the following charts which compare key ideas

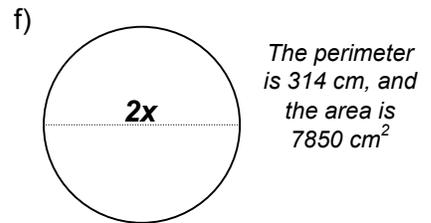
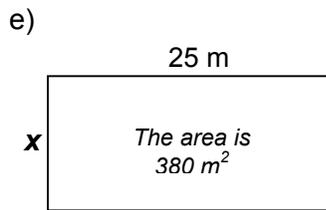
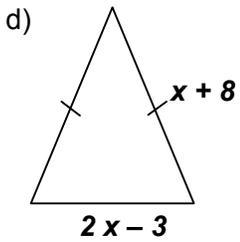
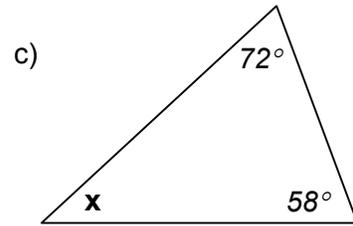
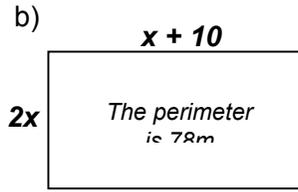
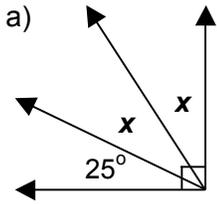
PERIMETER and AREA	<u>Perimeter</u>	Area
What operation used?		
What units are used?		
Simplifying variables	$x + x = \underline{\quad}$	$(x)(x) = \underline{\quad}$

DIRECT and PARTIAL Linear Relations	DIRECT	Part - ial
Nothing of one, is _____ of the other		
What does the equation look like?		
How many steps to solve its equation?		

SOLVABLE and NOT SOLVABLE Equations	SOLVABLE	Not Solvable
How many variables are in the equation?		
What does the equation look like?		

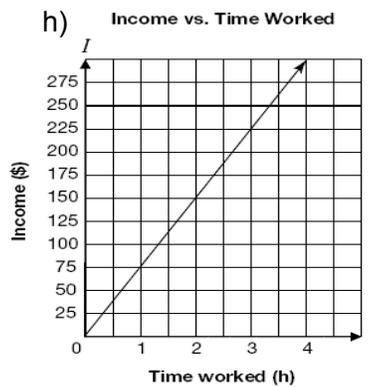
Practice

1. Model, simplify and solve (if possible) for each diagram or situation below.



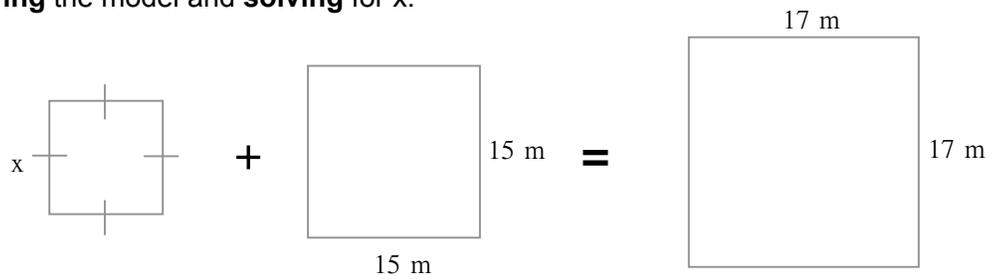
g)

Hours	Cost
0	90
2.5	130
5	170
7.5	210
10	250
12.5	290
15	330



Find the number of hours needed to make an income of \$800

2. The area of the two squares below add up to make the third square (like the Pythagorean Theorem!). Model the situation by **simplifying** the model and **solving** for x .

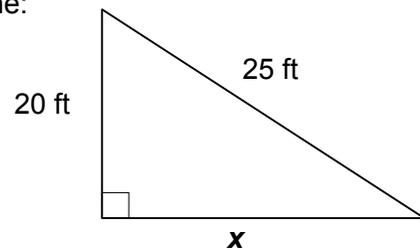


3. Given the triangle, model, simplify, and solve (if possible) for the:

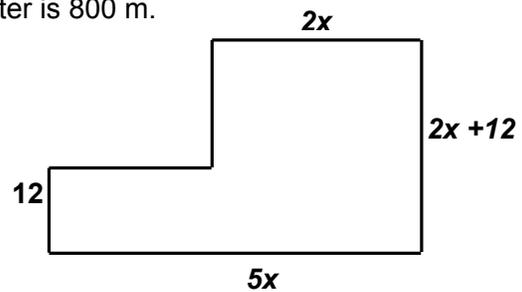
a) Perimeter:

b) Area:

c) Pythagorean Theorem:



4. Solve the following diagram given that the total perimeter is 800 m.



5. Solve the following equations

a) $x + 8 = 32$

b) $3x = 17$

c) $x^2 = 225$

d) $5x + 4 = 62$

e) $800 = 70 + 35m$

f) $12^2 = x^2 + 8^2$

g) $200 = 0.77x$

h) $800 = 75x + 150$

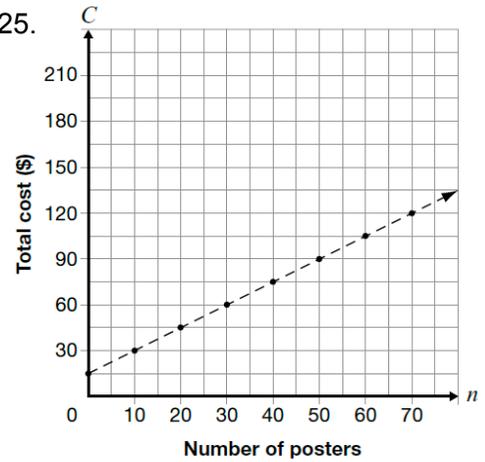
6. Model the following situations as equations.

a) A banquet hall charges \$300 to rent out the hall plus \$22.50 per person attending the function. Using algebra, find how much it would cost for 95 people to attend.

b) A cell phone data plan charges \$5 per month for the plan plus \$2 per gigabyte. Find the cost if somebody had the phone for 12 months and used 175 gigabytes.

c) The cost of making a phone call at a hotel is given by the equation, $C = 0.35t + 0.6$, where C is the cost in dollars and t is time in minutes. What's the **length** of a \$7.95 call.

d) Given the graph, find how many posters that you could get for \$225.



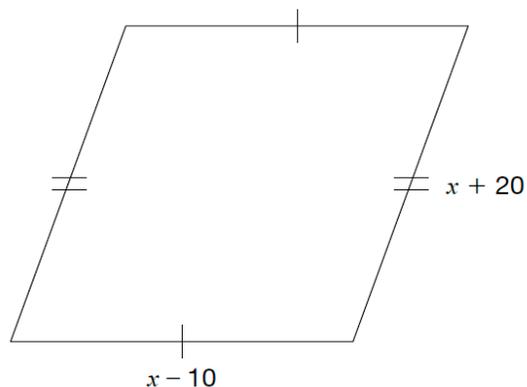
e) Given the chart, find how much the band would receive if they sold 40 000 CD's.

Number of CDs	Band earnings (\$)
0	10 000
5 000	10 600
10 000	11 200
15 000	11 800
20 000	12 400

7. Simplify and solve for x: $x + 2x + 10 + x + 5 = 240$

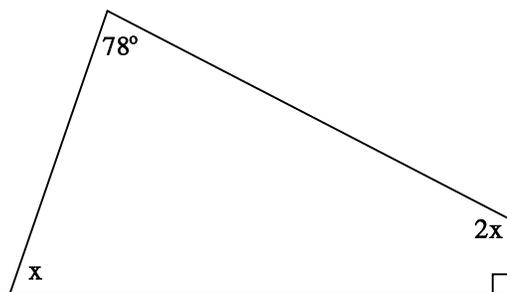
8. Pauline builds a fence around her garden, in the shape of a parallelogram, shown right.

Pauline uses 100 metres of fencing around the garden. Find the **dimensions** of her garden.



9. Marco is designing a new sail for his windsurfer. He uses the quadrilateral as the design of one part of the sail.

Determine the value of x in the quadrilateral.

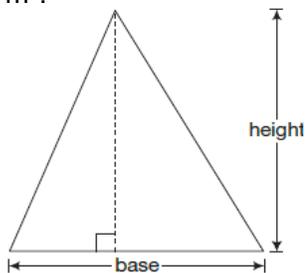


10. The cost, C , in dollars of creating n yearbooks is represented by the equation, $C = 400 + 25n$

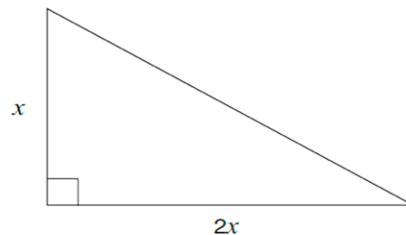
- The company requires at least \$1500 be spent on an order.
- The school only has 250 students and staff to buy books.

Find **possible values** for n and C in this scenario.

11. Find the height of the triangle below given that the base length and height are the same and the total area of the triangle is 32 m^2 .



12. A gardener designs a rose bed that's a right triangle. The ratio of the shorter sides is 2:1. If the area is 25 ft^2 , what are the dimensions of the shorter sides?



13. The volume of a rectangular prism is represented by $12x^3$. The height is represented by $3x$.

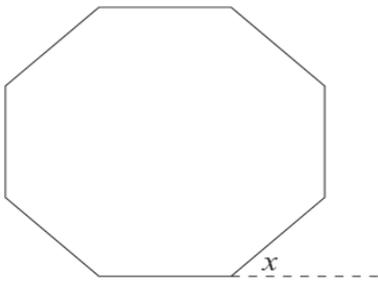
Which of the following represents the area of the base?

Hint:

$$V = (\text{area of base})(\text{height})$$

- a $4x^2$
- b $4x^3$
- c $9x^2$
- d $9x^3$

14. Consider the regular octagon below.



What is the value of x ?

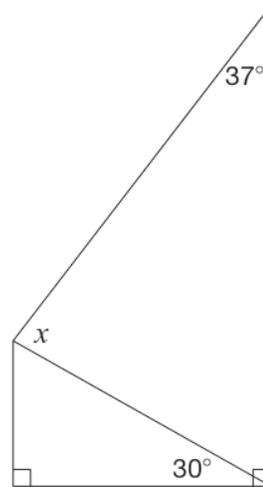
- a 15°
- b 30°
- c 45°
- d 60°

15. Which value of x satisfies the equation

$$5 - 2x = 9?$$

- F $x = -7$
- G $x = -2$
- H $x = 2$
- J $x = 3$

16. Consider the diagram below.



What is the value of x in the diagram?

- a 30°
- b 53°
- c 60°
- d 83°

17. Abigail buys a prepaid card for her cellphone. When she talks on her phone, a fee per minute is deducted from the value of the prepaid card.

The table below shows information about the remaining value of the card.

Total number of minutes used, t	Remaining value, V (\$)
10	22.00
20	19.00

Which equation represents the relationship between the remaining value and total number of minutes used?

- a $V = 22 - 3t$
- b $V = 22 - 0.30t$
- c $V = 25 - 3t$
- d $V = 25 - 0.30t$