

Unit One: Linear Inequalities

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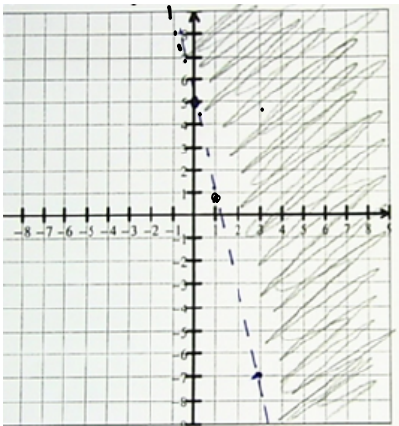
(a) $4x - 7y = 6$
 $2x + y = 12$
 ① $4x - 7y = 6$
 ② $\times 7$ $14x + 7y = 84$
 D+ ② $18x = 90$
 $x = 5$
 sub $4(5) - 7y = 6$
 $20 - 7y = 6$
 $-7y = -14$
 $y = 2$
 $(5, 2)$

(b) $6x - 5y = -3$
 $5x + 3y = 19$
 ① $\times 3$ $18x - 15y = -9$
 ② $\times 5$ $25x + 15y = 95$
 ①+② $43x = 86$
 $x = 2$
 sub $x = 2$
 $5(2) + 3y = 19$
 $10 + 3y = 19$
 $3y = 9$
 $y = 3$
 $(2, 3)$

(c) $3(x+4) - 4(y+1) = 7$
 $x - 9 = y$
 ① $3x + 12 - 4y - 4 = 7$
 ① $3x - 4y = -1$
 ② $x - y = 9$
 ① $3x - 4y = -1$
 ② $\times 3$ $3x - 3y = 27$
 ①-② $-y = -28$
 $y = 28$
 sub ② $x - 28 = 9$
 $x = 37$
 $(37, 28)$

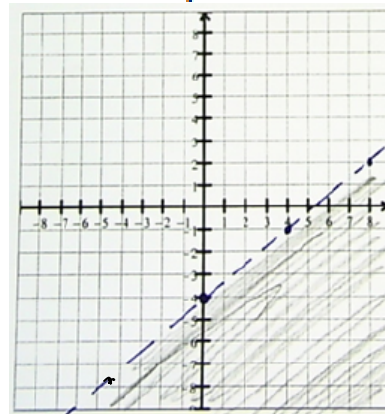
2. Graph the inequality:

a. $y > -4x + 5$



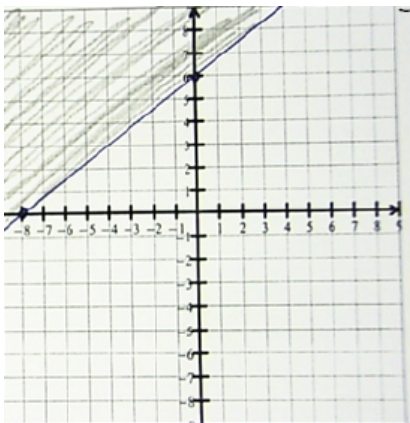
x	y
1	4
0	5
3	-7
-1	9

c. $y < \frac{3}{4}x - 4$



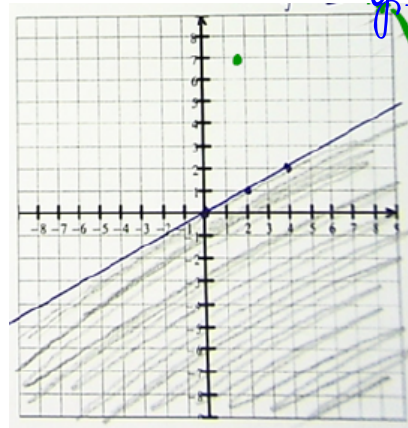
x	y
-4	7
0	-4
4	-1
8	2

b. $3x - 4y \leq -24$



$(0, 6)$
 $(-8, 0)$

d. $x \geq 2y$



Rearrange
 $y \leq \frac{x}{2}$

x	y
6	3
2	2
0	0
-2	-1

3. Given the following constraints, graph each:

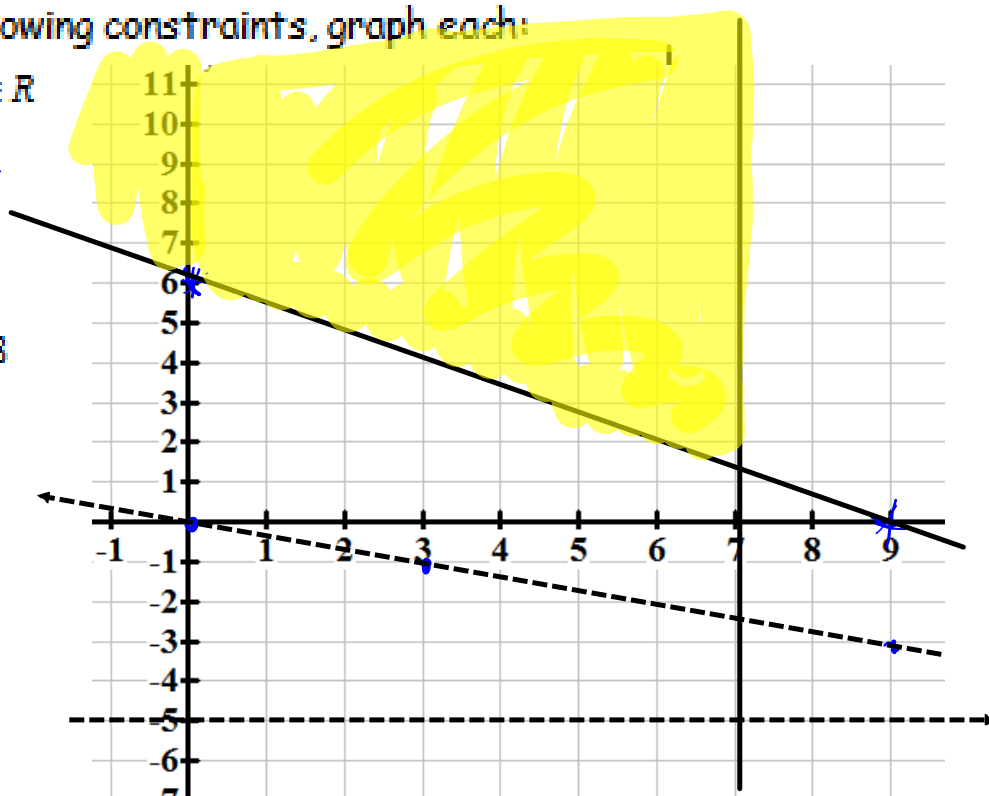
a. $x \in \mathbb{R}, y \in \mathbb{R}$

$x \leq 7$ ✓

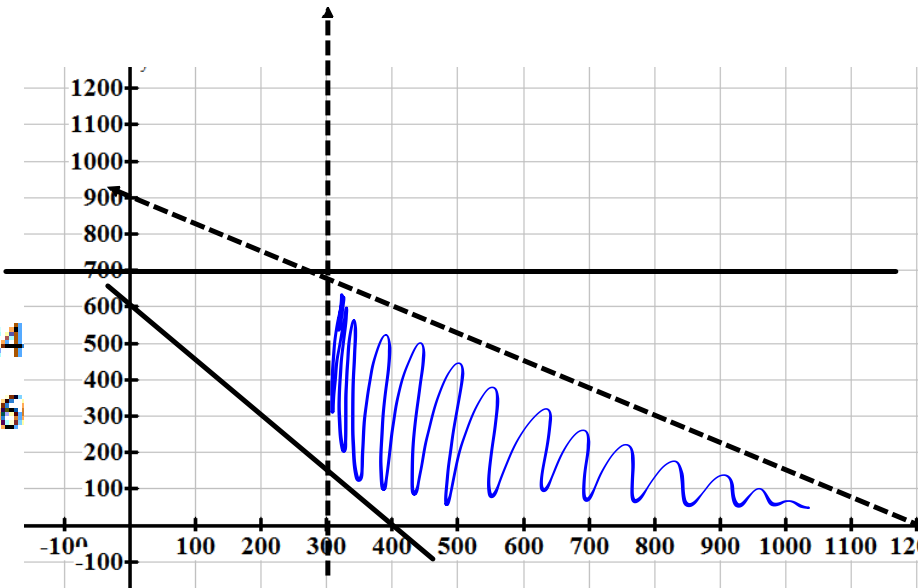
$y > -5$ ✓

$y > -\frac{1}{3}x$

$2x + 3y \geq 18$



3b. $x \geq 0$
 $y \geq 0$
 $x \geq 300$
 $y \leq 700$
 $6x + 4y \geq 24$
 $3x + 4y < 36$



4. In order to ensure optimal health for your puppy a lab technician recommends to feed the pup a daily diet containing a minimum of 24 grams (g) of fat, 36 g of carbohydrates, and 4 g of protein. The pup should be fed no more than five ounces of food a day. Rather than order food that is custom-blended, it is cheaper to order Food A and Food B, and blend them for an optimal mix. Food X contains 6 g of fat, 12 g of carbohydrates, and 2 g of protein per ounce, and costs \$0.20 per ounce. Food Y contains 12 g of fat, 12 g of carbohydrates, and 1 g of protein per ounce, at a cost of \$0.30 per ounce. What is the optimal blend?

Constraints

fat: $6x + 12y \geq 24$

carbs: $12x + 12y \geq 36$

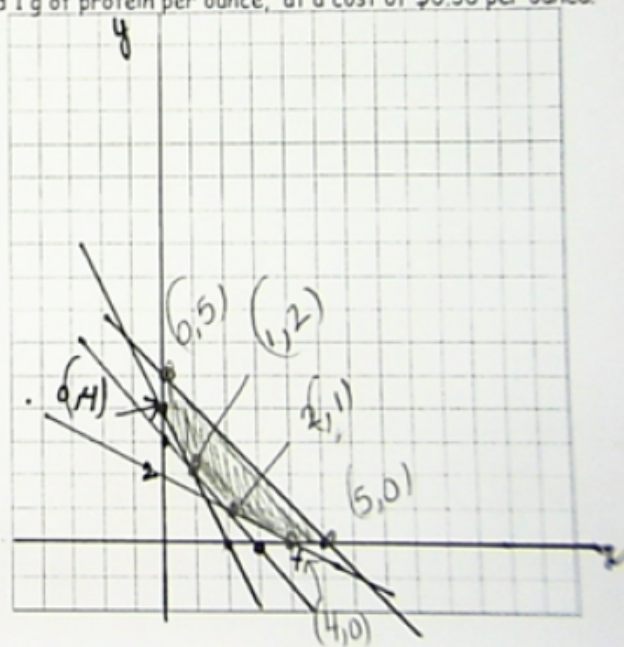
protein: $2x + 1y \geq 4$

the maximum weight of the food is five ounces, so: $x + y \leq 5$

Optimization

optimization equation will be the cost relation $C = 0.2x + 0.3y$, and we need the minimum value

$(0, 5) = 1.5$
 $(0, 4) = 1.2$
 $(1, 2) = 0.8$
 $(2, 1) = 0.7$
 $(5, 0) = 1.0$
 Minimum $(4, 0) = 0.8$



2 of Food X

1 of Food Y

4.

Constraints

fat: $6x + 12y \geq 24$

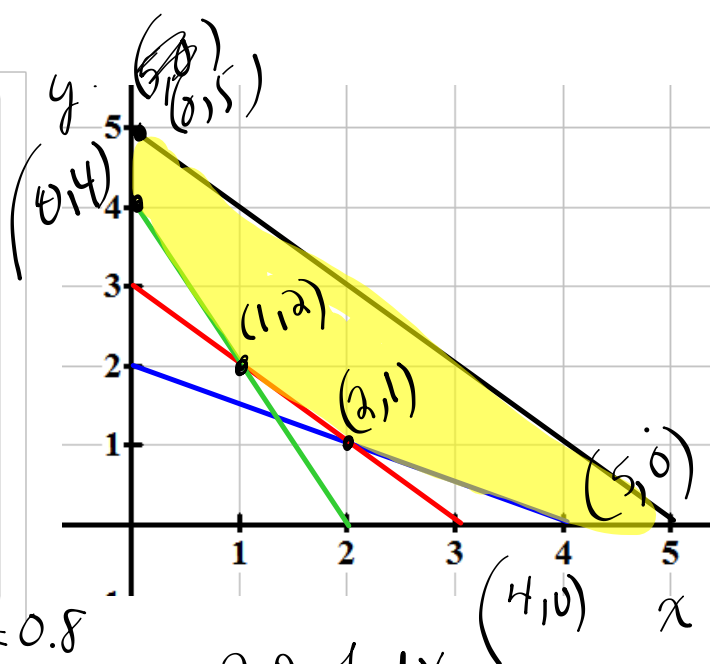
carbs: $12x + 12y \geq 36$

protein: $2x + 1y \geq 4$

the maximum weight of the food is five ounces, so: $x + y \leq 5$

Optimization

optimization equation will be the cost relation: $C = 0.2x + 0.3y$, and we need the minimum value



$\Rightarrow (0, 4) = 1.2$
 $(0, 5) = 1.5$
 $(1, 2) = 1.0$
 $(2, 1) = 0.7$
 $(4, 0) = 0.8$
 $(5, 0) = 1.6$

2 of food x
1 of food y

5. For every bouquet that is sold at a fundraising banquet, \$5 goes to charity. For every ticket that is sold, \$18 goes to charity. The organizers' goal is to raise at least \$8000. The organizers need to know how many bouquets and tickets must be sold to meet their goal.

a) Define the variables and write a linear inequality to represent the situation.

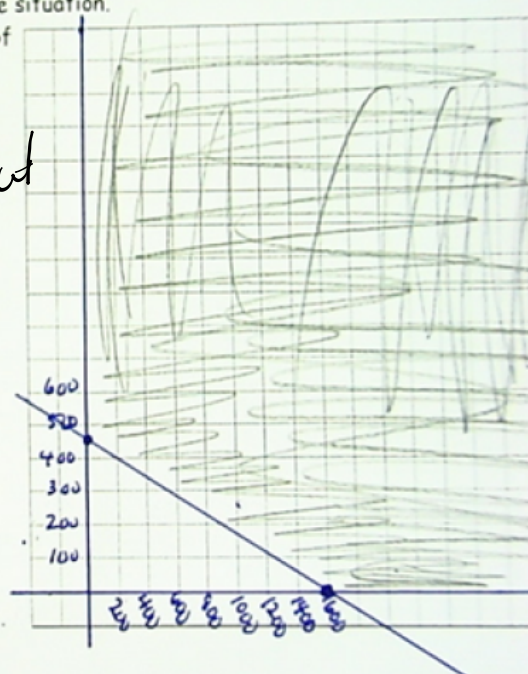
b) Graph the linear inequality. The first coordinate is the number of bouquets and the second is the number of tickets.

$x = \# \text{ bouquet}$
 $y = \# \text{ tickets}$

← \$5 for every bouquet
← \$18 for ticket

$$5x + 18y \geq 8000$$

$$\begin{array}{r|l} x & y \\ 0 & 444.4 \\ 1600 & 0 \end{array}$$



6. $x = \# \text{ high school friends}$
 $y = \# \text{ university friends}$

$$x + y \leq 375$$

$$x \geq 2y$$

7. $x = \# \text{ hot dogs}$
 $y = \# \text{ hamburgers}$

$$x + y \leq 300$$

$$x \leq 250$$

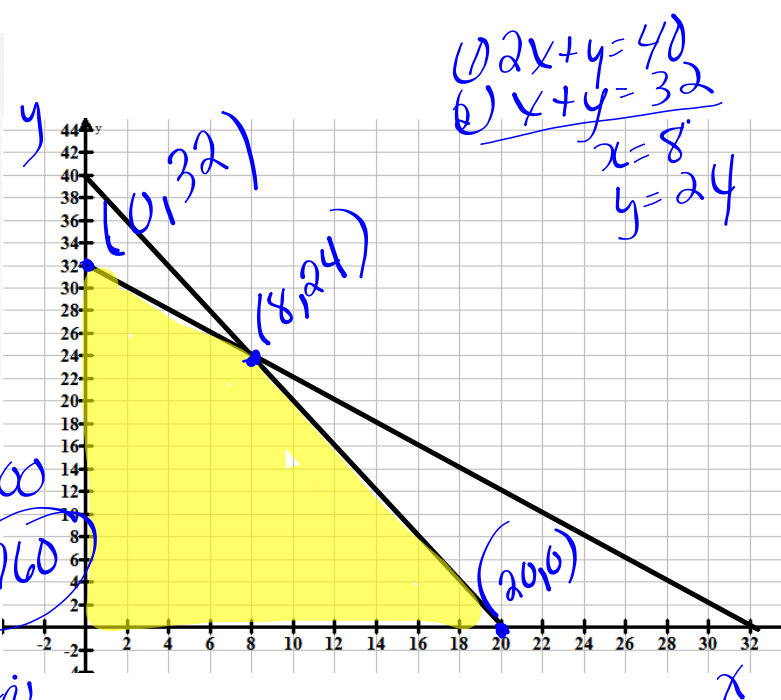
$$y \leq 125$$

Optimization $3x + 2y$

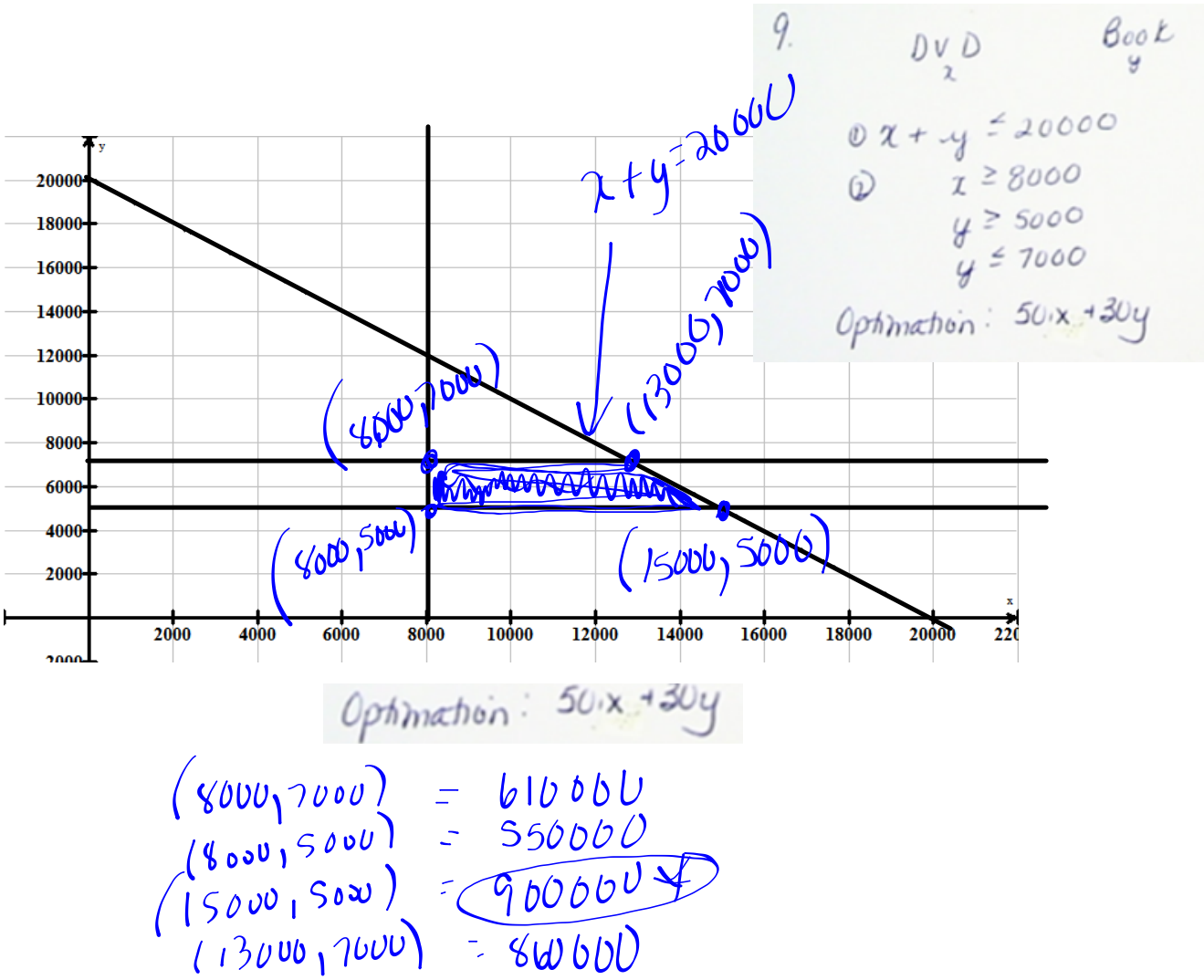
8. Downhill Cross Country

	x	y	
Assembly	$2x$	$1y$	≤ 40
Finish	$1x$	$1y$	≤ 32

$2x + y \leq 40$
 $x + y \leq 32$
 $x \geq 0$
 $y \geq 0$
 Optimization $70x + 50y$



$70x + 50y$
 $(0, 32) = 70(0) + 50(32) = 1600$
 $(8, 24) = 70(8) + 50(24) = 1760$
 $(20, 0) = 70(20) + 50(0) = 1400$



Unit 2: Quadratics

1. $y = -7x^2 - 126x - 700$
 $y = -7(x^2 + 18x) - 700$
 $y = -7(x^2 + 18x + 81 - 81) - 700$
 $y = -7(x^2 + 18x + 81) + 567 - 700$
 $y = -7(x + 9)^2 - 133$
 opens down
 $(-9, -133)$
 range $y \leq -133$
 max of -133
 y -int -700

b. $y = 9.5x^2 - 76x + 141$
 $y = 9.5(x^2 - 8x) + 141$
 $y = 9.5(x^2 - 8x + 16 - 16) + 141$
 $y = 9.5(x^2 - 8x + 16) - 152 + 141$
 $y = 9.5(x - 4)^2 - 11$
 opens up
 $(4, -11)$
 range $y \geq -11$
 min of -11
 y -int 141

c. $y = \frac{1}{5}x^2 + 4x + 24$
 $y = \frac{1}{5}(x^2 + 20x) + 24$
 $y = \frac{1}{5}(x^2 + 20x + 100 - 100) + 24$
 $y = \frac{1}{5}(x^2 + 20x + 100) - 20 + 24$
 $y = \frac{1}{5}(x + 10)^2 + 4$
 opens up
 $(-10, 4)$
 range $y \geq 4$
 min of 4
 y -int 24

d. $y = 11x^2 - 22x - 4$
 $y = 11(x^2 - 2x) - 4$
 $y = 11(x^2 - 2x + 1 - 1) - 4$
 $y = 11(x^2 - 2x + 1) - 11 - 4$
 $y = 11(x - 1)^2 - 15$
 opens up
 $(1, -15)$
 range $y \geq -15$
 min of -15
 y -int -4

2. Fill in the following: Show your work on a separate sheet when you change to standard form

Function remember $y=a(x-h)^2+k$	a	Opens Up or down	Vertex (h,k)	Axis of symmetry	Range	Standard form	Max/ min	y- intercept
$y = -\frac{1}{3}(x-4)^2 - 11$	$\frac{1}{3}$	Down	(4, -11)	$x=4$	$y \leq -11$	$y = \frac{1}{3}x^2 - \frac{8}{3}x - \frac{49}{3}$	max -11	$-\frac{49}{3}$
$y = 1.9(x+1)^2 + 18$	1.9	Up	(-1, 18)	$x=-1$	$y \geq 18$	$y = 1.9x^2 + 3.8x + 19.9$	min 18	19.9
$y = -x^2 + 6$	1	Down	(0, 6)	$x=0$	$y \leq 6$	$y = -x^2 + 6$	max 6	6
$y = 2(x-13)^2$	2	Up	(13, 0)	$x=13$	$y \geq 0$	$y = 2x^2 - 52x + 338$	min 0	0
$y = 14(x-10)^2 - 3.2$	14	Up	(10, -3.2)	$x=10$	$y \geq -3.2$	$y = 14x^2 - 280x + 1432$	min -3.2	1432

3. $y = -3(x+4)^2 + 32$

vertex (-4, 32)

opens down

$y = -3(x+4)^2 + 32$

$y = -3(x^2 + 8x + 16) + 32$

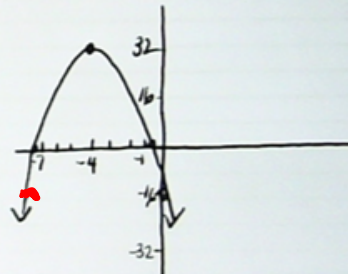
$y = -3x^2 - 24x - 48 + 32$

$y = -3x^2 - 24x - 16$

y-int -16 x-int $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$\frac{24 \pm \sqrt{384}}{-6}$$

$$\begin{array}{cc} -7.3 & -0.73 \end{array}$$



b. $y = \frac{1}{4}(x-12)^2 - 60$

vertex (12, -60)

opens up

$y = \frac{1}{4}(x-12)(x-12) - 60$

$y = \frac{1}{4}(x^2 - 24x + 144) - 60$

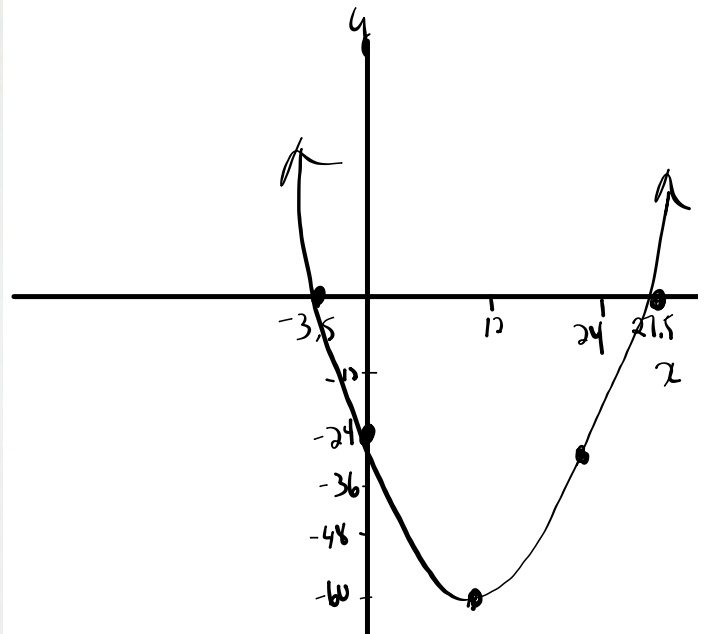
$y = \frac{1}{4}x^2 - 6x + 36 - 60$

$y = \frac{1}{4}x^2 - 6x - 24$

y-int -24 x-int $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$\frac{6 \pm \sqrt{60}}{0.5}$$

$$\begin{array}{cc} 27.5 & -3.5 \end{array}$$



4. vertex (9,3)

(a) p+ (7,-13)

$$y = a(x-9)^2 + 3$$

$$-13 = a(7-9)^2 + 3$$

$$-13 = a(-2)^2 + 3$$

$$-16 = 4a$$

$$a = -4$$

$$y = -4(x-9)^2 + 3$$

vertex (14,12)

(b) p+ (8,660)

$$y = a(x-14)^2 + 12$$

$$660 = a(8-14)^2 + 12$$

$$660 - 12 = a(-6)^2$$

$$648 = 36a$$

$$18 = a$$

$$y = 18(x-14)^2 + 12$$

$$y = a(x-h)^2 + k$$

$$5. (a) x^2 - 14x + 45 \quad \text{ST}$$

$$(x-9)(x-5)$$

$$(b) 3x^2 + 16x - 12 \quad \text{HT}$$

$$3x^2 + 18x - 2x - 12$$

$$3x(x+6) - 2(x+6)$$

$$(x+6)(3x-2)$$

$$(c) x^2 + x - 56 \quad \text{ST}$$

$$(x+8)(x-7)$$

$$(d) 8x^2 - 2x - 3 \quad \text{HT}$$

$$8x^2 - 6x + 4x - 3$$

$$2x(4x-3) + 1(4x-3)$$

$$(4x-3)(2x+1)$$

$$(e) x^2 - 144 \quad \text{DS}$$

$$(x-12)(x+12)$$

$$(f) 9x^2 - 100 \quad \text{DS}$$

$$(3x-10)(3x+10)$$

$$(g) 9x^2 - 6x - 8 \quad \text{HT}$$

$$9x^2 - 12x + 6x - 8$$

$$3x(3x-4) + 2(3x-4)$$

$$(3x-4)(3x+2)$$

$$(h) 12x^2 + 16x + 5 \quad \text{HT}$$

$$12x^2 + 10x + 6x + 5$$

$$2x(6x+5) + 1(6x+5)$$

$$(6x+5)(2x+1)$$

Simple trinomial
hard trinomials
(decomposition)
diff. of squares

6. (a) $8x(x-5) - 7(2-3x) = 3x+7$
 $8x^2 - 40x - 14 + 21x = 3x+7$
 $8x^2 - 22x - 21 = 0$ → Quad Form

$$\frac{22 \pm \sqrt{1156}}{16}$$

$$\frac{22 \pm 34}{16} \begin{cases} 3.5 \\ -0.75 \end{cases}$$

6. (b) $-x^2 + 3x + 2 = -3x^2 - 2x + 4$
 $2x^2 + 5x - 2 = 0$
 or Quad Form

$$\frac{-5 \pm \sqrt{41}}{4}$$

$$\begin{cases} 0.35 \\ -2.85 \end{cases}$$

7. (a) $h = 5t^2 - 40t + 83.4$
 $h = 5(t^2 - 8t) + 83.4$
 $h = 5(t^2 - 8t + 16 - 16) + 83.4$
 $h = 5(t^2 - 8t + 16) - 80 + 83.4$
 $h = 5(t-4)^2 + 3.4$
 min height = 3.4m

(b) When $t=0$
 $h = 5(0)^2 - 40(0) + 83.4$
 $h = 83.4m$

(c) $5 = 5t^2 - 40t + 83.4$
 $0 = 5t^2 - 40t + 78.4$

$$\frac{40 \pm \sqrt{32}}{10} \begin{cases} 3.4 \text{ sec} \\ 4.6 \text{ sec} \end{cases}$$

8.(a) $h = -9.8t^2 + 58.8t + 67.2$
 $h = -9.8(t^2 - 6t) + 67.2$
 $h = -9.8(t^2 - 6t + 9 - 9) + 67.2$
 $h = -9.8(t^2 - 6t + 9) + 88.2 + 67.2$
 $h = -9.8(t - 3)^2 + 155.4$
 $\text{max } h = 155.4 \text{ m}$

(b) at $t = 3 \text{ sec}$

(c) at $t = 5$

$h = -9.8(5)^2 + 58.8(5) + 67.2$
 $h = 116.2 \text{ m}$

9.(a) $h = -7t^2 + 7t + 2.25$
 $h = -7(t^2 - t) + 2.25$
 $h = -7(t^2 - t + 0.25 - 0.25) + 2.25$
 $h = -7(t^2 - t + 0.25) + 1.75 + 2.25$
 $h = -7(t - 0.5)^2 + 4$
 $\text{max } h = 4 \text{ m}$

(c) 2.25 m

(d) $1 = -7t^2 + 7t + 2.25$
 $0 = -7t^2 + 7t + 1.25$

$$\frac{-7 \pm \sqrt{84}}{-14}$$

-0.15 1.15

1.15 sec

(b) 0.5 sec

$$10. (a) h = -4.9t^2 + 29.4t - 7.9$$

$$h = -4.9(t^2 - 6t) - 7.9$$

$$-4.9(t^2 - 6t + 9 - 9) - 7.9$$

$$-4.9(t^2 - 6t + 9) + 44.1 - 7.9$$

$$h = -4.9(t - 3)^2 + 36.2$$

$$\underline{36.2 \text{ m}}$$

$$(b) 3 \text{ sec}$$

$$(c) h = -4.9(5)^2 + 29.4(5) - 7.9$$

$$= \underline{16.6}$$

$$(d) 25 = -4.9t^2 + 29.4t - 7.9$$

$$0 = -4.9t^2 + 29.4t - 32.9$$

$$\frac{-29.4 \pm \sqrt{219.52}}{-9.8}$$

$$1.49 \text{ sec}$$

$$4.51 \text{ sec}$$

$$(e) \text{ when } h = 0$$

$$0 = -4.9t^2 + 29.4t - 7.9$$

$$\frac{-29.4 \pm \sqrt{709.52}}{-9.8}$$

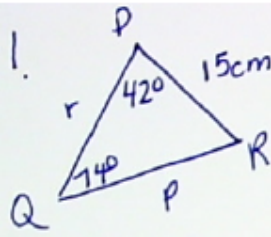
$$-9.8$$

$$0.28$$

$$\underline{5.72}$$

$$5.72 \text{ sec}$$

Trigonometry

1. 

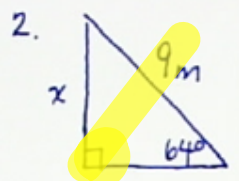
$$\frac{p}{\sin 42^\circ} = \frac{15}{\sin 74^\circ}$$

$$p = 10.4$$

$$\angle R = 64^\circ$$

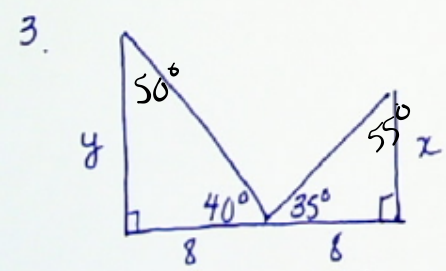
$$\frac{r}{\sin 64^\circ} = \frac{15}{\sin 74^\circ}$$

$$r = 14.03$$

2. 

$$\sin 64^\circ = \frac{x}{9} \text{ OR } \frac{x}{\sin 64^\circ} = \frac{9}{\sin 90^\circ}$$

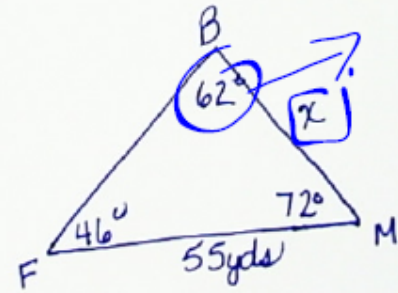
$$x = 8.1m$$

3. 

$$y = 6.7$$

$$x = 5.6$$

$$(1.1) \quad 6.7 - 5.6 = 1.1$$

4. 

$$\frac{x}{\sin 46^\circ} = \frac{55}{\sin 62^\circ}$$

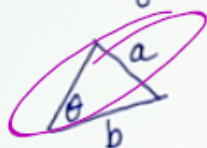
$$x = 44.8 \text{ yds}$$

$$\frac{y}{\sin 46^\circ} = \frac{8}{\sin 50^\circ}$$

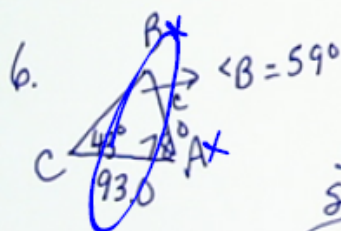
$$y = 6.7$$

5. (a) A side and angle opposite.
 b) SAS or SSS

(c) Law of Sines: Given 2 sides and an angle

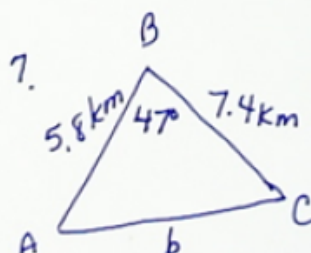


when $a < b$



$$\frac{c}{\sin 43^\circ} = \frac{93}{\sin 59^\circ}$$

$$c = 73.99$$

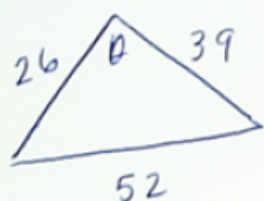


$$b^2 = 5.8^2 + 7.4^2 - 2(5.8)(7.4)\cos 47^\circ$$

$$b^2 = 29.851$$

$$b = 5.46 \text{ km}$$

8.

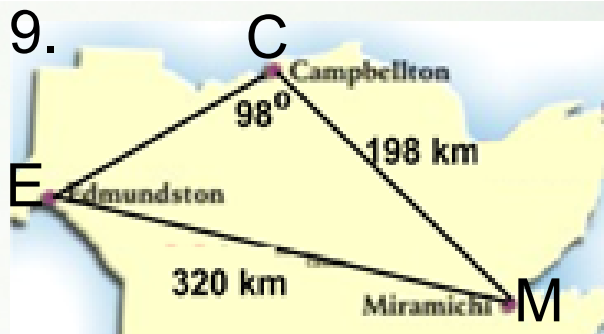


$$\cos \theta = \frac{26^2 + 39^2 - 52^2}{2(26)(39)}$$

$$\cos \theta = -0.25$$

$$\theta = 104.5^\circ$$

9.

Find E

$$\angle E = 37.8^\circ$$

$$\frac{198}{\sin E} = \frac{320}{\sin 98^\circ}$$

$$\angle M = 44.2^\circ$$

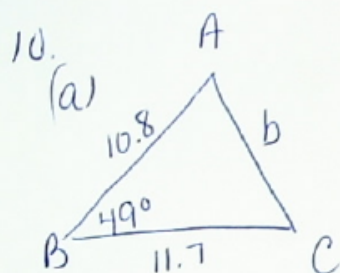
$$\sin E = \frac{198 \sin 98^\circ}{320}$$

$$\frac{x}{\sin 44.2^\circ} = \frac{320}{\sin 98^\circ}$$

$$\sin E = 0.6127$$

$$x = 225.3 \text{ km}$$

$$E = 37.8^\circ$$



$$b^2 = 10.8^2 + 11.7^2 - 2(10.8)(11.7)\cos 49^\circ$$

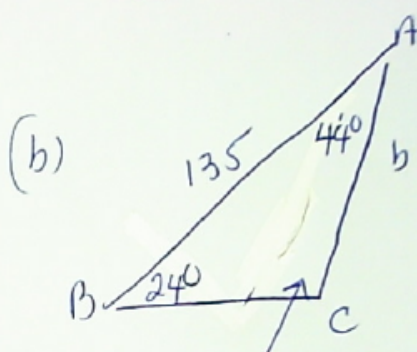
$$b^2 = 87.7308$$

$$b = 9.4$$

$$\frac{\sin C}{10.8} = \frac{\sin 49^\circ}{9.4}$$

$$\sin C = 0.8671$$

$$C = 60^\circ \quad A = 71^\circ$$



$$C = 112^\circ$$

$$\frac{b}{\sin 24^\circ} = \frac{135}{\sin 112^\circ}$$

$$b = 59.2$$

$$\frac{a}{\sin 44^\circ} = \frac{135}{\sin 112^\circ}$$

$$a = 101.1$$

11. Determine the measure of the obtuse angle at A in triangle PAL

$$\frac{\sin A}{11.1} = \frac{\sin 36^\circ}{7.2}$$

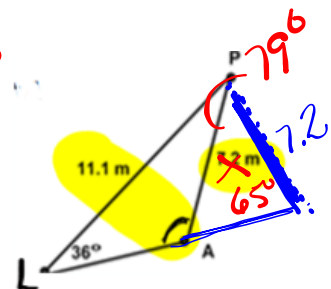
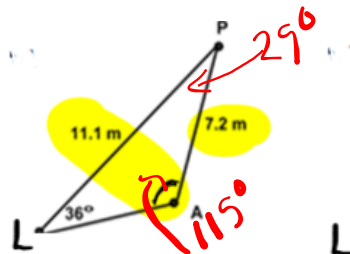
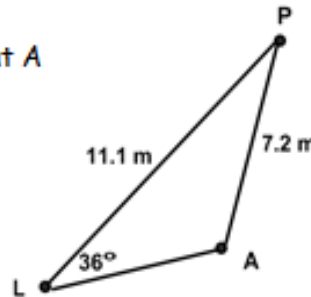
$$\sin A = \frac{11.1 \sin 36^\circ}{7.2}$$

$$\sin A = 0.9062$$

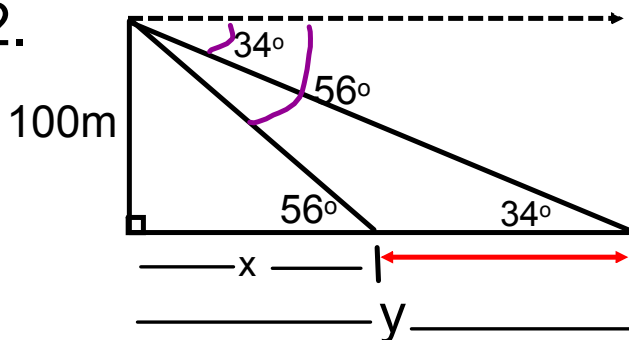
$$A = \sin^{-1} 0.9062$$

$$A = 65^\circ$$

other \angle : $180 - 65 = 115^\circ$ obtuse



12.



$$\tan 56^\circ = \frac{100}{x}$$

$$x = \frac{100}{\tan 56^\circ}$$

$$x = 67.5 \text{ m}$$

$$\tan 34^\circ = \frac{100}{y}$$

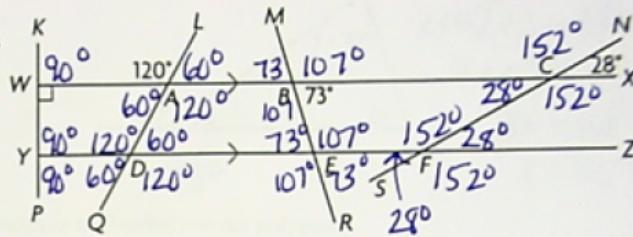
$$y = \frac{100}{\tan 34^\circ}$$

$$y = 148.3 \text{ m}$$

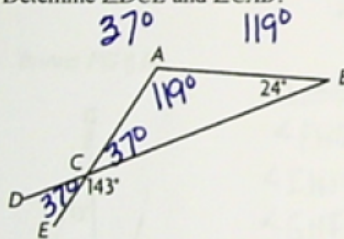
$$148.3 \text{ m} - 67.5 \text{ m} = 80.8 \text{ m}$$

Unit Four: Geometry

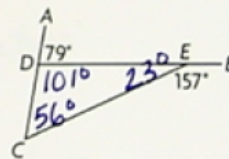
1. Determine the measure of all unknown angles



2. Determine $\angle DCE$ and $\angle CAB$?



3. Determine the correct measures of the interior angles of $\triangle CDE$



4. a. Determine the sum of the measures of the interior angles of this polygon.
b. Are each angle the same measure

(a) $180(8-2) = 1080^\circ$
(b) NO, sides are not equal



5. Each interior angle of a regular convex polygon measures 144° . How many sides does the polygon have?

$$\frac{180(n-2)}{n} = 144 \quad 10 \text{ sides}$$

$$180(n-2) = 144n$$

$$180n - 360 = 144n$$

$$180n - 144n = 360$$

$$36n = 360$$

$$n = 10$$

6. Determine the value of b.

6 sides

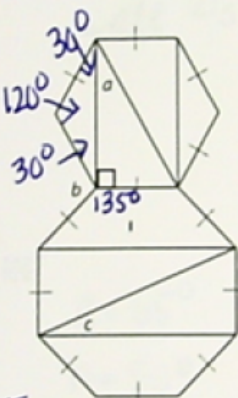
$$180(6-2) = 720$$

$$\frac{720}{6} = 120^\circ$$

8 sides

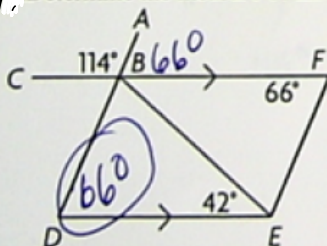
$$180(8-2) = 1080$$

$$\frac{1080}{8} = 135$$

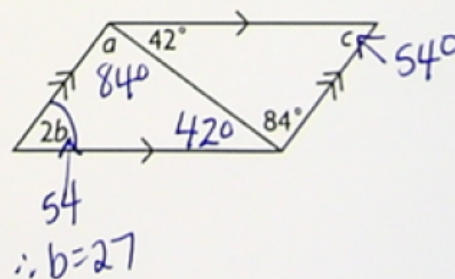


$$\angle b = 105^\circ$$

7. Determine the measure of $\angle BDE$.



8. Determine the values of a, b, and c.



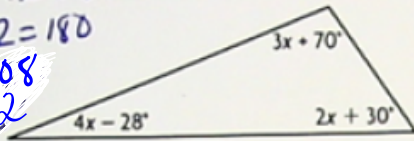
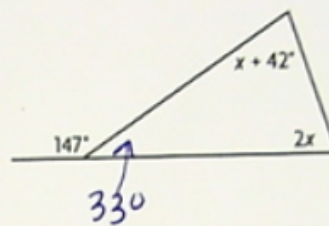
9. Determine the value of x .

$$3x + 70 + 4x - 28 + 2x + 30 = 180$$

$$9x + 72 = 180$$

$$9x = 108$$

$$x = 12$$

10. Determine the value of x .

$$x + 42 + 2x + 33 = 180$$

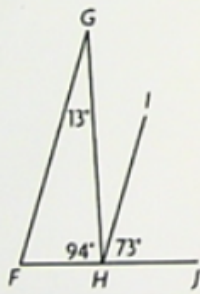
$$3x + 75 = 180$$

$$3x = 105$$

$$x = 35$$

11. Determine the sum of the measures of the angles in a 13-sided convex polygon. Show your calculation.

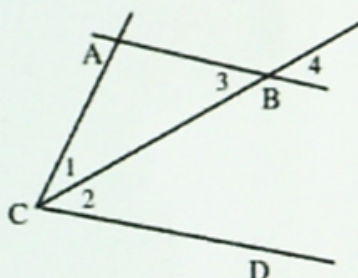
$$180(13 - 2) = 1980^\circ$$

12. Prove: $FG \parallel HI$ 

state.	justification
$\angle FHG = 94^\circ$	Given
$\angle IHI = 73^\circ$	Given
$\angle GHI = 13^\circ$	Supplementary
$\angle FGH = 13^\circ$	Given
$\angle FGH = \angle GHI$	proven
$FG \parallel HI$	equal alt \angle s

13. Given $AB \parallel CD$

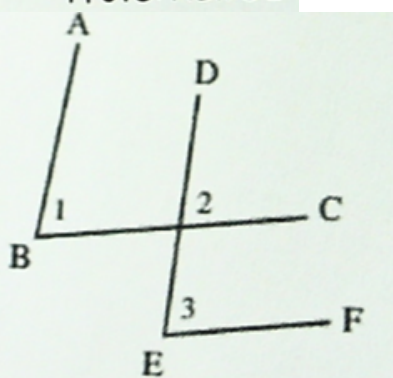
$$\angle 1 = \angle 4$$

Prove: $\angle 1 = \angle 2$ 

Statement	reason
$AB \parallel CD$	given
$\angle 1 = \angle 4$	given
$\angle 4 = \angle 2$	Corresp. \angle s.
$\angle 1 = \angle 2$	transitive

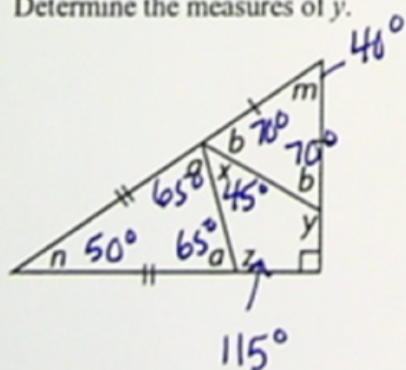
14. Given $BC \parallel EF$

$$\angle 1 = \angle 3$$

Prove: $AB \parallel DE$ 

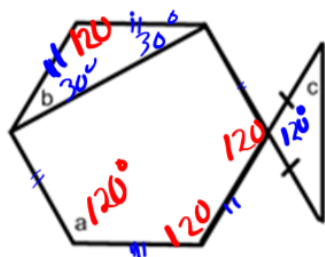
Statement	reason
$BC \parallel EF$	given
$\angle 1 = \angle 3$	given
$\angle 2 = \angle 3$	Corresp. \angle s
$\angle 1 = \angle 2$	transitive
$AB \parallel DE$	equal corr. \angle s

15. Given $\angle z = 115^\circ$.
Determine the measures of y .



$$\begin{aligned} a &= 65^\circ \\ n &= 50^\circ \\ m &= 40^\circ \\ b &= 70^\circ \\ x &= 45^\circ \\ y &= 110^\circ \end{aligned}$$

16.



Each \angle $\frac{180(n-2)}{n}$
 $\frac{180(6-2)}{6} = 120^\circ$

$$\begin{aligned} \angle a &= 120^\circ \\ \angle b &= 30^\circ \\ \angle c &= 30^\circ \end{aligned}$$

Unit 5: Financial

1. Patrick purchased a \$15000 GIC for 12 years with a simple interest rate of 3.7%. What is his GIC worth in 12 years?

2. Wendy sold her acre of land by the river for \$35 000, she plans to invest the money for 20 years. Her options are:
- Option A: 20-year bond at 4.5%, compounded semi-annually.
 - Option B: 10-year GIC at 3.1%, compounded semi-annually; reinvest funds in a 10-year GIC at 5.1%, compounded quarterly.
- a. Determine the future value of each investment
b. Determine the rate of return (round to the nearest tenth of a percent) for each investment

Option A

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

$$= 35000 \left(1 + \frac{0.045}{2}\right)^{20(2)}$$

$$= 35000 \left(1 + \frac{0.045}{2}\right)^{40}$$

$$= \$48321.61$$

Opt. B

first 10 yrs

$$A = 35000 \left(1 + \frac{0.031}{2}\right)^{10(2)}$$

$$= 35000 \left(1 + \frac{0.031}{2}\right)^{20}$$

$$= \$47606.54$$

next 10 yrs:

$$A = 47606.54 \left(1 + \frac{0.051}{4}\right)^{4(10)}$$

$$= 47606.54 \left(1 + \frac{0.051}{4}\right)^{40}$$

$$= \$79623.58$$

b) $ROR = \frac{\text{Interest earned}}{\text{amt. invested}}$

opt A = $\frac{48321.61 - 35000}{35000} = 1.44$ $\frac{\text{Rate}}{100} = 144\%$

opt B = $\frac{79623.58 - 35000}{35000} = 1.26$ $\frac{\text{Rate}}{100} = 126\%$

3. a. How much should your parents have invested when you were born if interest rates were 7.3% compounded monthly if they wished to have 430000 for your 18th birthday for school.
b. Approximately how long would it take for a sum of money to double if it is invested at 9.5%

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

$$= \frac{430000}{\left(1 + \frac{0.073}{12}\right)^{12(18)}}$$

$$= \$116021.38$$

(b) Doubling Period = $\frac{72}{9.5}$ $\frac{\text{Rule of 72}}{72}$

$$= 7.6 \text{ yrs}$$

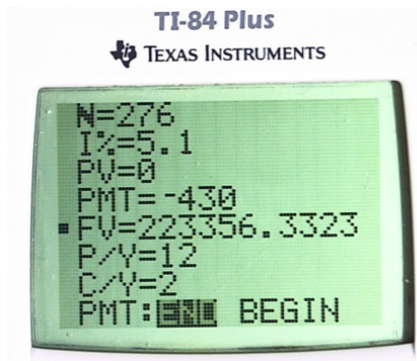
4. Sylvia opened this portfolio when she turned 25.
- Monthly deposits of \$275 into an account averaging 5.8%, compounded daily
 - A \$10 000 bond earning 8.3%, compounded monthly
- What will be the value of the portfolio when she turns 55? Show your work.

N=360
I%=5.8
PV=0
PMT=-275
FV=265906.7735
P/Y=12
C/Y=12
PMT: [] BEGIN

$10000 * (1 + \frac{0.083}{12})^{360}$
119583.31

+ \$265906.77
+ \$119583.31
\$385490.08

5. Barney Rubble regularly deposits \$430 per month into a Registered Retirement Savings Plan (RRSP) for his retirement. How much money will he have when he retires in 23 years, knowing that the interest rate is 5.1% compounded semi-annually?

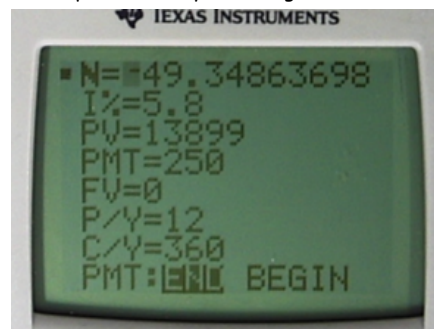


\$223356.33

6. Cynthia wants to purchase a used car 12300 plus HST of 13%/a, she can afford monthly payments of \$275 if the car dealer offers her a finance plan of 5.8% compounded daily, how long will it take her to pay it off?

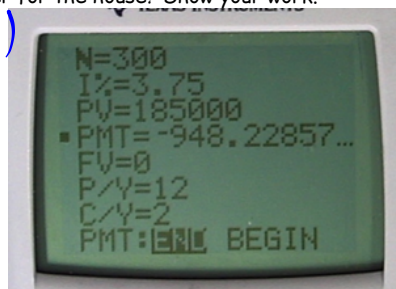
$$6) 12300 + \frac{HST}{1599} = \$13899$$

49 payments



7. The Wilsons are buying a house that costs \$260 000. They will finance the purchase with a 25 year mortgage with an interest rate of 3.75%, compounded semi-annually. They must make a down payment of \$75000.
- How much will each payment be? Show your work.
 - How much interest will Debbie end up paying by the time she has paid off the loan? Show your work.
 - How much will she pay altogether for the house? Show your work.

$$\begin{array}{r} 260000 \\ - 75000 \\ \hline 185000 \end{array} \quad (a)$$

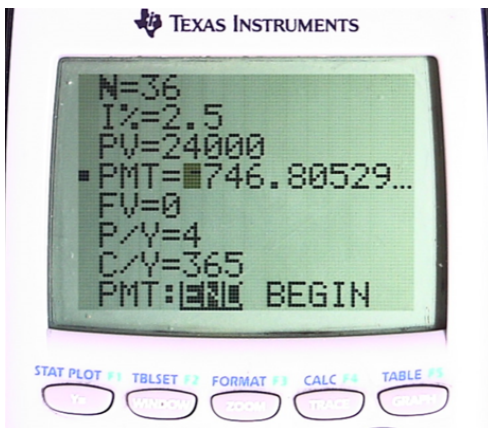


payment
\$948.23

(b) $\$948.23 \times 12 \times 25 = 284469$ is what she paid,
She mortgaged \$185000.
 $284469 - 185000 = \$99469$ interest

(c) $\begin{array}{r} 260000 \\ 99469 \\ \hline \$359469 \end{array}$ OR $\begin{array}{l} 185000 + 75000 + 99469 \\ \text{mortgage} \quad \text{down} \quad \text{interest} \\ \text{payment} \\ \hline = \$359469 \end{array}$

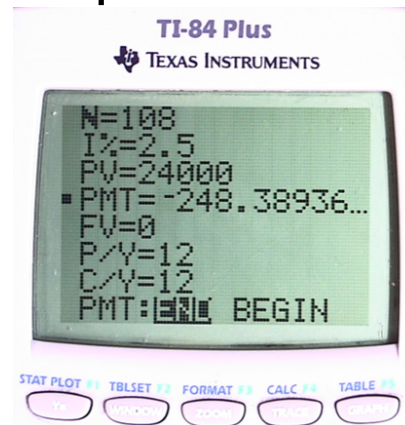
8. option A



payment \$746.81 quarterly
for 9 years

$$\$746.81 \times 4 \times 9 = \$26885.16$$

option B

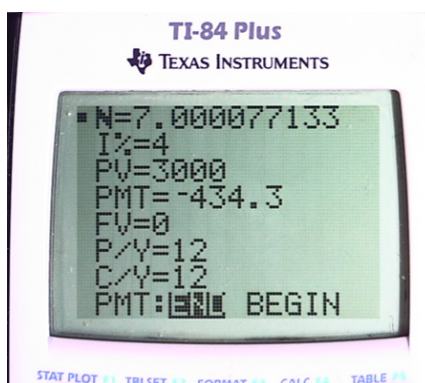


payment \$248.39 monthly
for 9 years

$$\$248.39 \times 12 \times 9 = \$26933.04$$

cheaper

9.



7 payments

7 months

a. $7 \times \$434.30 = \3040.10

b. \$40.10 interest

