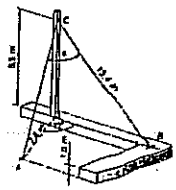
March 31

MPM2D

Mr. Park

Trigonometry Unit Outline



The schedule and homework assignments below are subject to change at discretion.

	Day	Topic	Homework
Tu	1 M31	Get Ready Angle Properties	Worksheet
W	2 A1	Similar and Congruent Triangles	Worksheet
TH	3 A2	Trigonometric Ratios – Finding Sides	Worksheet
Tu	4 A7	Trigonometric Ratios – Finding Angles	Worksheet
W	5 A8	Angles of Elevation and Depression	Worksheet
	6	Clinometer Assignment	
	7	Sine Law	Worksheet
	8	Cosine Law	Worksheet
	9	Compass Points	Worksheet
	10	Mixed Triangle Problems and Right Triangle Problems	Worksheet
	11	More Trig. Word Problems & Test Review	pg. 516 # 2 pg. 518 # 3, 4 pg. 522 # 11 - 14 pg. 524 # 15 - 18 pg. 580 # 2, 3 pg. 582 # 5, 6 pg. 583 # 7 - 9 pg. 585 # 11, 12

MPM2D

Get Ready - Review

1. Solve.

(a) $\frac{2}{5} = \frac{x}{20}$ (b) $\frac{4}{7} = \frac{36}{x}$

(c) $\frac{9}{12} = \frac{24}{x}$ (d) $\frac{25}{x} = \frac{5}{2}$

(e) $\frac{9}{x} = \frac{15}{20}$ (f) $\frac{x}{15} = \frac{64}{24}$

HW (g) $\frac{20}{65} = \frac{16}{x}$ HW (h) $\frac{x}{7} = \frac{6}{21}$

(a) $\frac{2}{5} \times \frac{x}{20}$ cross multiplication

$5x = 2 \times 20$

$\frac{5x}{5} = \frac{40}{5}$

$x = 8$

(e) $\frac{9}{x} \times \frac{15}{12}$

$15x = 108 \div 3$

$\frac{15x}{15} = \frac{108}{15} \div 3$

$x = \frac{36}{5}$

2. Write the missing term(s) for each ratio

(a) 2 : 3 = ■ : 6

(b) 3 : 8 = ■ : 24

(c) 8 : 5 = 16 : ■

(d) 1 : ■ : 8 = 3 : 12 : ■

(e) 2 : 5 : ■ = 6 : ■ : 9

(a) $2 : 3 = x : 6$ (×2)

$x = 2 \times 2 = 4$

(d) $1 : x : 8 = 3 : 12 : y$ (×3, ×3, ×3)

$3x = 12$

$x = 12 \div 3 = 4$

$8 \times 3 = y$

$y = 24$

3. The ratio of boys to girls at Highland Secondary School is 3 to 4. If there are 435 boys at the school, determine the school's entire population.

Boys Girls B G

$3 : 4 = 435 : x$ (×145, ×145)

$435 \div 3 = 145$

$x = 4 \times 145 = 580$

Total pop = Boys + Girls

$= 435 + 580$

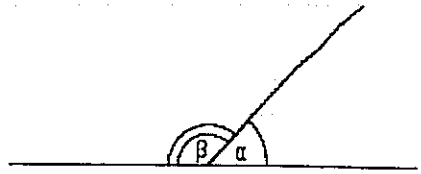
$= 1015$

Answers:

1. a) x = 8 b) x = 63 c) x = 32 d) x = 10
   e) x = 12 f) x = 40 g) x = 52 h) x = 2
2. a) 4 b) 9 c) 10 d) 4, 24
   e) 3, 15
3. 1015 people

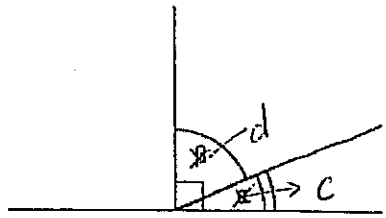
Angle Properties

1. **Supplementary Angles**
   Two angles are supplementary if their sum is 180°.



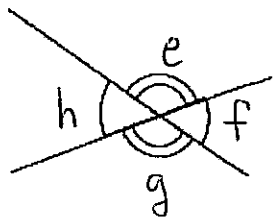
∠a and ∠B are supplementary angles.

2. **Complementary Angles**
   Two angles are complementary if their sum is 90°.



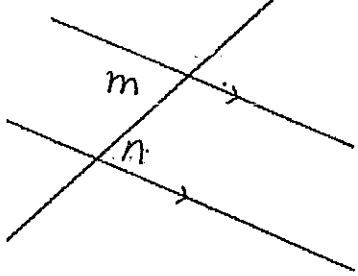
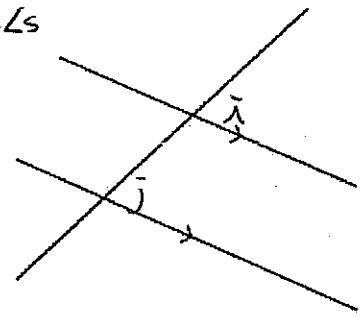
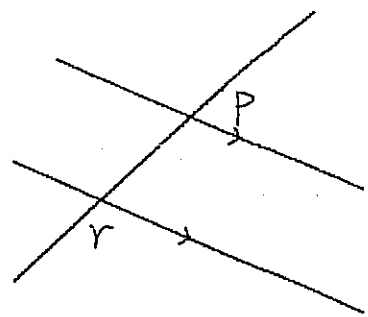
∠c and ∠d are complementary angles.

3. **Opposite Angles**
   When two lines intersect, opposite angles are equal.



∠e = ∠g and ∠h = ∠f

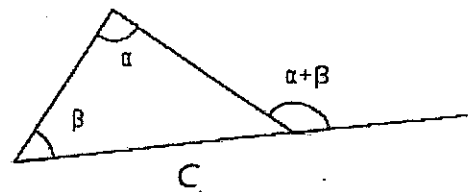
4. **Angle Relationships in Parallel Lines**
   When a transversal intersects two parallel lines:

Alternate angles are equal	**Corresponding angles** are equal	**Co-interior angles** have a sum of 180°
		
∠m = ∠n because they are alternate ∠s	∠i = ∠j because they are corresponding angle.	∠P + ∠r = 180°

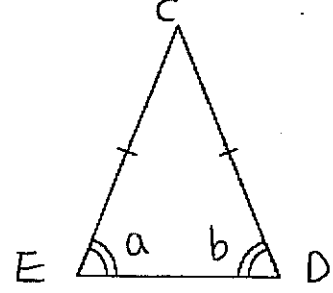
5. **Sum of the Angles in a Triangle**
   The sum of the angles in a triangle is 180°.

∠a + ∠b + ∠c = 180°

6. **Exterior Angles of a Triangle**
   The exterior angle in a triangle is equal to the sum of the two interior opposite angles.



7. **Angles of an Isosceles Triangle**
   The angles that are opposite the equal sides in an isosceles triangle are equal.



∠a = ∠b and $\overline{CD} = \overline{CE}$

1.

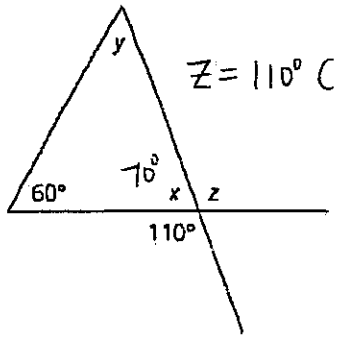
Determine the values of x, y, and z in each diagram.

(a)

$x = 70^\circ$ (supplementary $\angle$)

$y = 180 - 70 - 60 = 50^\circ$

$Z = 110^\circ$ (opposite $\angle$)



(b)

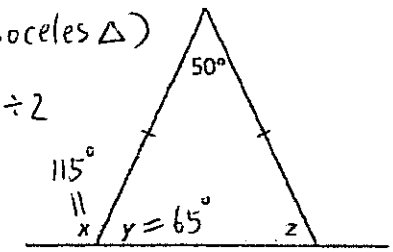
$\angle y = Z$ (isoceles $\triangle$)

$\angle y = (180 - 50) \div 2$

$\angle y = 65^\circ$

$\angle x = 180^\circ - 65^\circ$

$\angle x = 115^\circ$

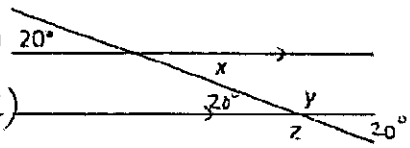


(c)

$\angle x = 20^\circ$ (opp $\angle$)

$\angle y = 160^\circ$ (supp $\angle$)

$\angle z = 160^\circ$ (opp $\angle$)



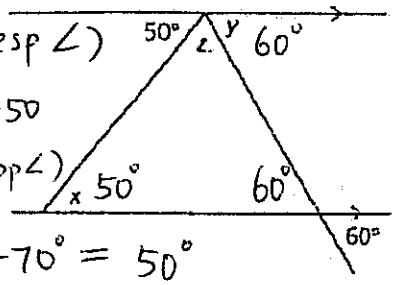
(d)

$\angle y = 60^\circ$ (corresp $\angle$)

$\angle z = 180 - 60 - 50$

$\angle z = 70^\circ$ (supp $\angle$)

$\angle x = 180 - 60^\circ - 70^\circ = 50^\circ$



* Next page is HW

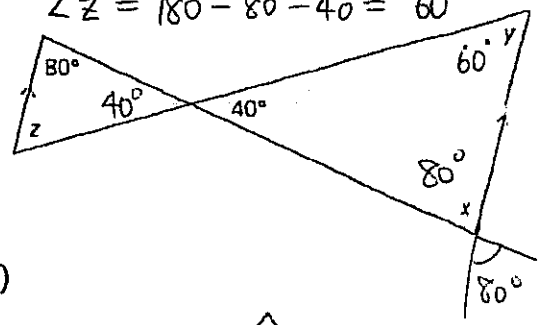
Recall: What is Pythagorean Theorem?

$x = 80^\circ$ (alternate $\angle$)

(e)

$\angle y = 180 - 40^\circ - 80^\circ = 60^\circ$

$\angle z = 180 - 80 - 40 = 60^\circ$



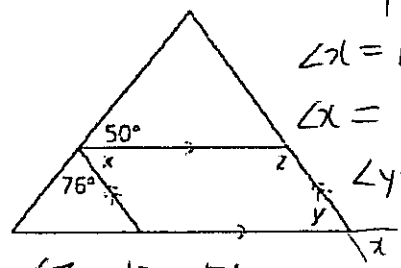
(f)

$\angle x = 180 - 50 - 76$

$\angle x = 54^\circ$

$\angle y = 54^\circ$

$\angle z = 180 - 54 = 126^\circ$



(g)

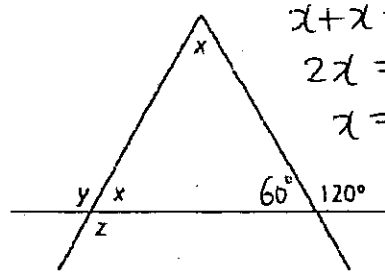
$x + x = 120^\circ$

$2x = 120$

$x = 60^\circ$

$Y = 120^\circ$

$Z = 120^\circ$

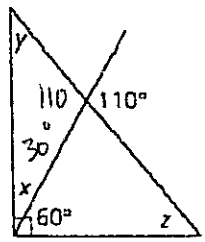


(h)

$x = 30^\circ$

$y = 40^\circ$

$z = 50^\circ$



Answers:

a) x = 70, y = 50, z = 110
b) x = 115, y = 65, z = 65
c) x = 20, y = 160, z = 160
d) x = 50, y = 60, z = 70
e) x = 80, y = 60, z = 60
f) x = 54, y = 54, z = 126
g) x = 60, y = 120, z = 120
h) x = 30, y = 40, z = 50