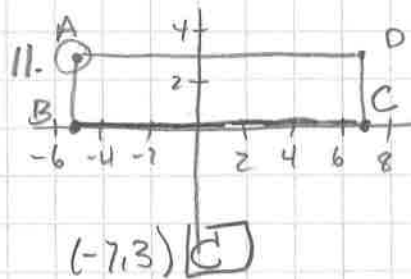


# GEOMETRY - 2<sup>nd</sup> Sem Exam Review #2

1.  $180(n-2)$   
 $180(30-2)$   
 $180(28)$   
 $5040$  [B]



2. Sum of Ext. Angles always equals  $360^\circ$  [H]

12. Diag. of a rhombus are  $\perp$  [H]  $90^\circ$

3.  $180 - 108 = 72$  [B]

13.  $\overline{PR}$  Bisects a right angle  
 $m\angle PRS = 45^\circ$  [B]

4.  $3x + 20 = 5x - 12$   
 $32 = 2x$   
 $x = 16$  [H]

14. LD and LC [J] and LA & LB

5. [D]

15.  $180 - 136 = 44^\circ$  [A]

6. Alt. Interior Angles

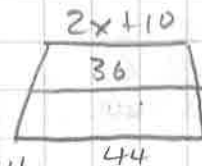
16.  $\frac{30+24}{2} = \frac{54}{2} = 27$  [G]

$4x = 24$      $y - 10 = 32$   
 $x = 6$      $y = 42$  [F]

median =  $\frac{b_1 + b_2}{2}$

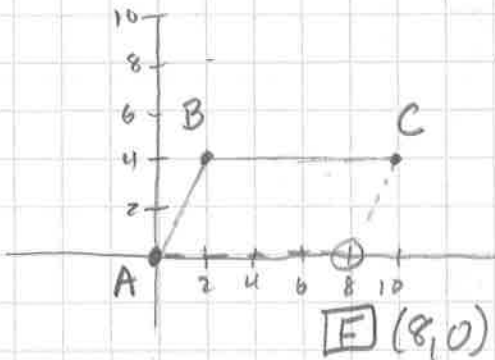
7.  $x = 46^\circ$  [B]

17.



$36 = \frac{2x+10+44}{2}$

8.



$72 = 2x + 54$

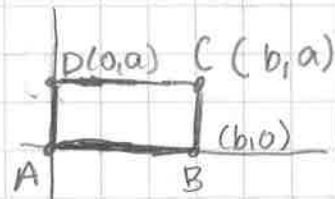
$18 = 2x$

$x = 9$  [A]

18. [J]  $EF = \frac{BC+AD}{2}$

9. [D]

19. [C] (b, a)



10.  $2x + 10 = 56$   
 $2x = 46$   
 $x = 23$  [F]

20. [G]

$$21. \frac{9}{15} \rightarrow \frac{3}{5} \quad 3:5 \quad \boxed{A}$$

$$22. \frac{8 \text{ in}}{12 \text{ ft}} = \frac{12 \text{ in}}{x} \quad \text{Cross Multiply}$$

$$8x = 144$$

$$x = 18 \text{ ft} \quad \boxed{J}$$

$$23. \frac{5}{6} = \frac{4}{x}$$

$$5x = 24$$

$$x = 4.8 \quad \boxed{B}$$

$$24. \frac{2 \text{ defective}}{30 \text{ bulbs}} = \frac{x}{450 \text{ bulbs}}$$

$$900 = 30x$$

$$30 = x \quad \boxed{G}$$

25.  $\boxed{B}$  Ratios of sides are the same

$$\frac{5}{15} = \frac{1}{3} \quad \frac{12}{36} = \frac{1}{3} \quad \frac{13}{39} = \frac{1}{3}$$

$$26. \frac{18}{6} = \frac{x-2}{9}$$

$$162 = 6x - 12$$

$$174 = 6x$$

$$x = 29 \quad \boxed{J}$$

$$27. \frac{BC}{QR} = \frac{6}{4} = \frac{3}{2} \quad \boxed{B}$$

$$28. 4x - 100 = x - 25 \quad \boxed{H}$$

29. AA Similarity  $\boxed{A}$

$$30. \frac{b}{8} = \frac{MN}{9}$$

$$54 = 8 \cdot MN$$

$$\frac{54}{8} = MN$$

$$\frac{27}{4} = MN$$

$$6\frac{3}{4} = MN \quad \boxed{G}$$

$$31. \frac{5 \text{ ft tall}}{x} = \frac{4 \text{ ft shadow}}{44 \text{ ft shadow}}$$

$$4x = 220$$

$$x = 55 \text{ ft tall} \quad \boxed{D}$$

32.

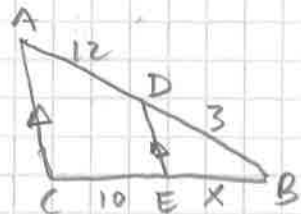
"Side-Splitter"

$$\frac{12}{10} = \frac{3}{x}$$

$$12x = 30$$

$$x = \frac{30}{12}$$

$$x = \frac{5}{2} = 2\frac{1}{2} \quad \boxed{J}$$



33. "Side Splitter"

$$\frac{18}{3x} = \frac{12}{16}$$

$$36x = 288$$

$$x = 8 \quad \boxed{A}$$

$$34. \frac{16}{24} = \frac{10}{x}$$

$$16x = 240$$

$$x = 15 \quad \boxed{G}$$

$$35. \frac{b}{10} = \frac{P}{35}$$

$$10p = 210$$

$$p = 21 \quad \boxed{A}$$

$$36. \frac{28}{12} = \frac{x}{3}$$

$$12x = 84$$

$$x = 7 \quad \boxed{G}$$

$$37. \frac{16}{12} = \frac{10}{x}$$

$$16x = 120$$

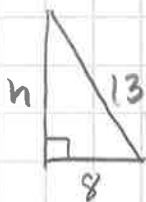
$$x = 7\frac{1}{2} \quad \boxed{D}$$

Be careful!  
look at diagram  
closely

38.  $\frac{24}{18} = \frac{x}{15}$   
 $360 = 18x$   
 $x = 20$  [H]

42.  $5^2 + 12^2 = x^2$   
 $25 + 144 = x^2$   
 $169 = x^2$   
 $x = 13$  [F]

39.  $\frac{1}{32}$  scale factor



$8^2 + h^2 = 13^2$   
 $64 + h^2 = 169$   
 $h^2 = 105$   
 $h = \sqrt{105} \approx 10.25$

Perimeter of large

$P = 8 + 13 + 10.25$

$P = 31.25$

$P_{\text{small}} = 31.25 \times \frac{1}{32} \approx 0.98 \text{ m}$

$0.98 \times 100 \text{ cm} \approx 98 \text{ cm}$  [D]

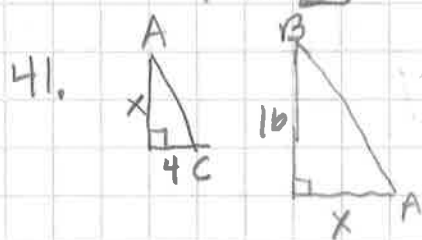
43.  $x^2 + 15^2 = 17^2$   
 $x^2 + 225 = 289$   
 $x^2 = 64$   
 $x = 8$  [B]

44.  $9^2 + 12^2 = 15^2$   
 $81 + 144 = 225$   
 $225 = 225$  [J]

45. Isos Rt.  $\Delta$   $6\sqrt{2}$  [B]

OR  
 $6^2 + 6^2 = x^2$   $45^\circ - 45^\circ - 90^\circ$   
 $36 + 36 = x^2$   
 $72 = x^2$   
 $\sqrt{72} = x$   
 $x = \sqrt{36 \cdot 2}$   
 $x = 6\sqrt{2}$

40.  $\frac{20}{x} = \frac{x}{5}$   
 $x^2 = 100$   
 $x = 10$  [J]

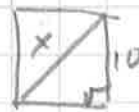


$\frac{x}{16} = \frac{4}{x}$   
 $x^2 = 64$   
 $x = 8$  [A]

46.  $45^\circ - 45^\circ - 90^\circ$

$\frac{15}{\sqrt{2}} = \frac{15}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{15\sqrt{2}}{2} = 7.5\sqrt{2}$  [F]

47.  $10^2 + 10^2 = x^2$   
 $200 = x^2$   
 $x = \sqrt{200}$   
 $x = \sqrt{100 \cdot 2}$   
 $x = 10\sqrt{2} \text{ m}$  [B]



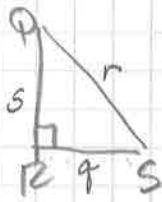
$45^\circ - 45^\circ - 90^\circ$   
 $10\sqrt{2}$

48.  $30^\circ - 60^\circ - 90^\circ$  Short leg  $\times 2 = \text{hyp.}$   
 $5 \times 2 = 10$  [H]

49.  $30^\circ - 60^\circ - 90^\circ$  hyp  $\div 2 = \text{short leg}$   
 $50 \div 2 = 25$  short leg  $\times \sqrt{3} = \text{long leg}$

$25\sqrt{3}$  [C]

50



$$\tan S = \frac{\text{opp}}{\text{adj}} \quad \boxed{J}$$

$$51. \cos A = \frac{\text{adj}}{\text{hyp}} = \frac{72}{75} = \frac{24}{25} \quad \boxed{D}$$

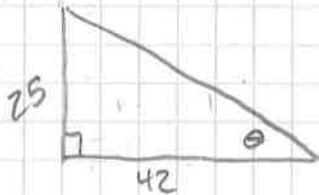
52. opp - hyp.

$$\sin 67^\circ = \frac{x}{20}$$

$$20 \sin 67^\circ = x$$

$$x = 18.4 \quad \boxed{H}$$

53.



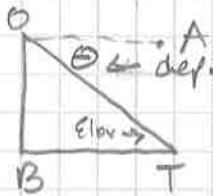
opp-adj

$$\tan \theta = \frac{25}{42}$$

$$\theta = \tan^{-1} \frac{25}{42}$$

$$\theta = 30.8^\circ \quad \boxed{A}$$

54.

 $\angle AOT \quad \boxed{E}$ 

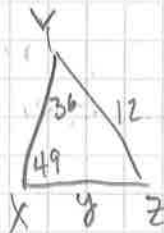
55. law of Sines

$$\frac{\sin 49^\circ}{12} = \frac{\sin 36^\circ}{y}$$

$$y \sin 49^\circ = 12 \sin 36^\circ$$

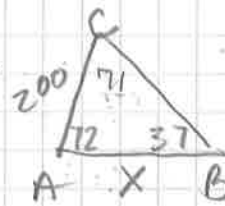
$$y = \frac{12 \sin 36^\circ}{\sin 49^\circ}$$

$$y = 9.35 \quad \boxed{B}$$



56. law of Sines

w/c



$$\begin{aligned} \text{m}\angle C &= 180 - (72 + 37) \\ &= 180 - 109 \\ &= 71 \end{aligned}$$

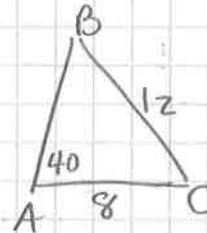
$$\frac{\sin 37^\circ}{200} = \frac{\sin 71^\circ}{x}$$

$$x \sin 37^\circ = 200 \sin 71^\circ$$

$$x = \frac{200 \sin 71^\circ}{\sin 37^\circ}$$

$$x = 314.2 \text{ ft}$$

57. law of Sines



$$\frac{\sin 40^\circ}{12} = \frac{\sin B}{8}$$

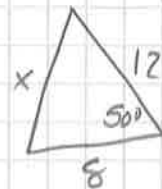
$$8 \sin 40^\circ = 12 \sin B$$

$$\sin B = 0.4285$$

$$B = \sin^{-1} 0.4285$$

$$B = 25^\circ \quad \boxed{A}$$

58. law of Cos.



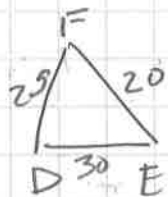
$$x^2 = 8^2 + 12^2 - 2(8)(12) \cos 50^\circ$$

$$x^2 = 84.58$$

$$x = \sqrt{84.58}$$

$$x \approx 9.2 \text{ ft} \quad \boxed{G}$$

59. Law of Cos



$$30^2 = 20^2 + 25^2 - 2(20)(25)\cos F$$

$$900 = 400 + 625 - 1000\cos F$$

$$\begin{array}{r} 900 = 1025 - 1000\cos F \\ -1025 \quad -1025 \end{array}$$

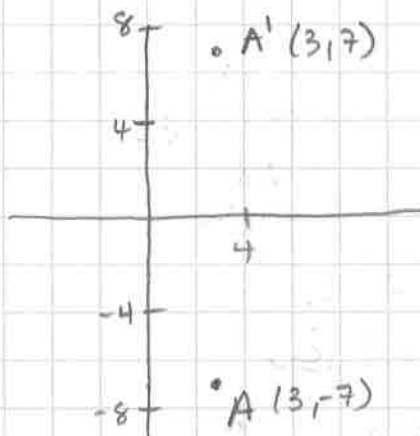
$$\begin{array}{r} -125 = -1000\cos F \\ \hline -1000 \quad -1000 \end{array}$$

$$0.125 = \cos F$$

$$F = \cos^{-1} 0.125$$

$$F \approx 88^\circ \quad \boxed{A}$$

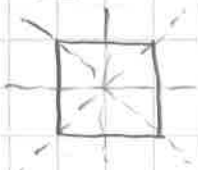
60.



$\boxed{F}$  Ref. over x-axis

61. BA  $\boxed{B}$

62.



4  $\boxed{H}$

63.  $\boxed{A}$

64.  $\boxed{G}$  slide-translation

$$65. (3, 5) \rightarrow (3-4, 5+6)$$

$$\rightarrow (-1, 11)$$

$\boxed{D}$

66.  $\boxed{H}$

67. Enlargement since  $\frac{3}{2} > 1$   
Reduction if  $< 1$

$\boxed{A}$

68.  $A(0, 3) \rightarrow \div 3$  to get  $A'(0, 1)$   
 $C(3, -3) \rightarrow \div 3$  to get  $C'(1, -1)$

$$\boxed{H} \quad \div 3 = \frac{1}{3}$$

$$69. \frac{144}{96} = \frac{3}{2} \quad \boxed{C}$$

$$70. \vec{AB} = B - A$$

$$= \langle -4 - 2, 6 - 3 \rangle$$

$$= \langle -6, 3 \rangle \quad \boxed{H}$$

$$71. \|\vec{AB}\| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

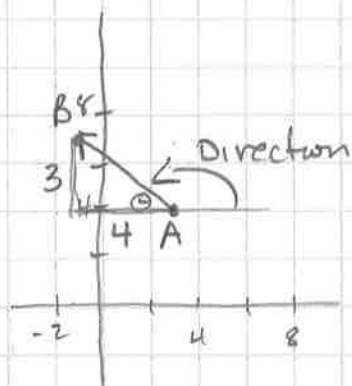
$$= \sqrt{(-4 - 3)^2 + (7 - 4)^2}$$

$$= \sqrt{(-4)^2 + 3^2}$$

$$= \sqrt{16 + 9}$$

$$= \sqrt{25} = 5 \quad \boxed{B}$$

72.



$$\theta = \tan^{-1}\left(\frac{y}{x}\right) = \tan^{-1}\left(\frac{3}{4}\right)$$

$$\theta = 36.9^\circ$$

$$\text{Direction of } \vec{AB} = 180 - 36.9$$

$$= 143.1^\circ \quad \boxed{J}$$

$$73. A' = \langle 3 - 4, 7 + 2 \rangle = \langle -1, 9 \rangle \quad \boxed{B}$$

$$74. 360 \div 5 \text{ sides} = 72^\circ \quad \boxed{E}$$

75.  $X(6,5)$   $X'(6\cdot 2, 5\cdot 2)$   
 $X'(-12, -10)$  **D**

76.  $4 \times 2.5$   $6 \times 2.5$   
 10 in by 15 in **G**

77.  $\overline{XB}$  **A** also  $\overline{XA}$ ,  $\overline{XC}$

78.  $\overline{BC}$  **H** also  $\overline{AB}$ ,  $\overline{AC}$

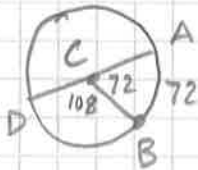
79.  $\overleftrightarrow{BD}$  **D**

80.  $C = 2\pi r$

$$\frac{22}{2\pi} = \frac{2\pi r}{2\pi}$$

$r = 3.5$  in **G**

81.  $180 - 72$   
 $108$  **B**



82. Arc length =  $2\pi r \times \frac{A^\circ}{360^\circ}$

$$= 2\pi(3) \times \frac{60}{360}$$

$$= \pi = 3.14$$
 **H**

83.  $CF = \frac{1}{2} AB = \frac{1}{2} \cdot 12 = 6$  cm **A**

84.

$$7^2 + 24^2 = r^2$$

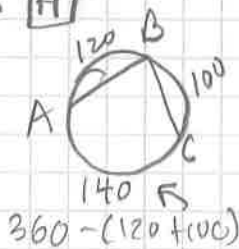


$r = 25$  m **H**

85.

$$m\angle ABC = \frac{1}{2} \cdot 140$$

**B** = 70



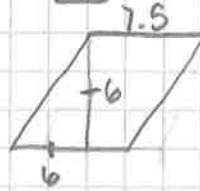
86.  $m\angle Z = 180 - 126$   
 $= 54$  **F** Supp. since the Quad is inscribed

87.  $x = 10 - 2 = 8$  m **D**

88.  $A = bh$   
 $A = 12.5 \cdot 5$   
 $= 62.5$  ft<sup>2</sup> **J**

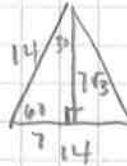


89.  $A = bh$   
 $A = 6(7.5)$   
 $A = 45$  in<sup>2</sup> **B**



90.

91.



$$A = \frac{14(7)}{2}$$

$$A = 84.9$$
 in<sup>2</sup> **C**

92.  $C = 20\pi$   
 $C = 2\pi r$   
 $\frac{20\pi}{2\pi} = \frac{2\pi r}{2\pi}$

$10 = r$

$$A = \pi r^2$$

$$A = \pi(10)^2$$
  
 $A = 100\pi$  **J**