

Honors Geometry B Review ANSWERS

1. $120 + 18\pi \approx 176.55 \text{ cm}^2$
2. $256 - 64\pi \approx 54.94 \text{ in}^2$
3. $48\pi + 64 \approx 214.80 \text{ ft}^2$
4. **D**
5. **A**
6. **a. True b. True c. False d. False e. True**
7. $\sqrt{18} = 3\sqrt{2}$
8. $\sqrt{50} = 5\sqrt{2}$
9. $\sqrt{45} = 3\sqrt{5}$

10.

The coordinates of PQMN are P(1,2), Q(4,5), M(7,3), N(4,0)

$$PQ = \sqrt{3^2 + 3^2} = \sqrt{18} = MN = \sqrt{3^2 + 3^2} = \sqrt{18}$$

$$QM = \sqrt{3^2 + (-2)^2} = \sqrt{13} = PN = \sqrt{3^2 + (-2)^2} = \sqrt{13}$$

Therefore, the opposite sides are congruent.

11.

The coordinates of the midpoint M $\left(\frac{0+6}{2}, \frac{6+0}{2}\right) \rightarrow M(3,3)$

Triangle AMB is a right triangle since the slope of $\overline{AM} = 1$ and the slope of $\overline{MB} = -1$

Length of $\overline{AM} = \sqrt{18}$

Length of $\overline{BM} = \sqrt{18}$

The area of triangle AMB $= \frac{1}{2} \times \sqrt{18} \times \sqrt{18} = 9$

12. **Right Triangle: $6^2 + 8^2 = 10^2$**
13. **Obtuse Triangle: $3^2 + 8^2 < 9^2$**
14. **Acute Triangle: $9^2 + 12^2 > 14^2$**
15. $\sqrt{51}$
16. $\sqrt{65}$
17. $x = 13, y = 5$
18. $x = 15\sqrt{2}$
19. $x = 4, y = 4\sqrt{3}$
20. $x = 11$
21. $x = 8, y = 16$

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22. $x = 6\sqrt{2}$
23. $x = 6\sqrt{15}, y = 18\sqrt{5}$
24. **C**
25. **Surface Area = $192\pi \approx 603.19$; Volume $360\pi \approx 1130.97$**
26. **Surface Area = $432 + 108\sqrt{3} \approx 619.06$ Volume = $648\sqrt{3} \approx 1122.37$;**
27. **Slant Height = 5; Surface Area = 96, Volume = 48**
28. **Slant Height = 5; Surface Area = $24\pi \approx 75.40$, Volume = $12\pi \approx 37.70$**
29. **Surface Area = $64\pi \approx 201.06\text{cm}^2$, Volume = $\frac{256\pi}{3} \approx 268.08\text{cm}^3$**
30. **Surface Area = $(125 + 5\sqrt{106})\pi \approx 554.42$, Volume = $325\pi \approx 1021.02$**
31. **Surface Area = $240\pi \approx 753.98$, Volume = $576\pi \approx 1809.56$**
32. **B**
33. **D**
34. a. $\sqrt{83} \approx 9.11$ b. *the longest segment inside the prism*
35. **8 in^3**
36. a. **$r = 10$**

Since the cones are similar, their corresponding parts are proportional.

$$\frac{6}{4} = \frac{15}{r}, r = 10.$$

b. *Ratio of volumes = $\frac{8}{125}$*

The ratio of the volumes is cube of the ratio of the linear dimensions.

$$\left(\frac{2}{5}\right)^3 = \frac{8}{125}$$

37. **Corresponding angles are congruent, corresponding sides are proportional.**
38. **$x = 10$**
39. **$x = 32$**
40. **$x = 32$**
41. **$x = 18$**
42. **a. True b. True c. True d. False e. False**

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43. 42

Parallel lines to a side of a triangle that intersect the other two sides divide those sides proportionally.

$$\frac{CE}{9} = \frac{2}{3}, CE = 6$$

$$\frac{EG}{6} = \frac{2}{3}, EG = 4$$

$$\frac{FG}{18} = \frac{8}{12}, FG = 12$$

$$\text{The perimeter of } AFG = 3 + 9 + 6 + 12 + 4 + 6 + 2 = 42$$

44.

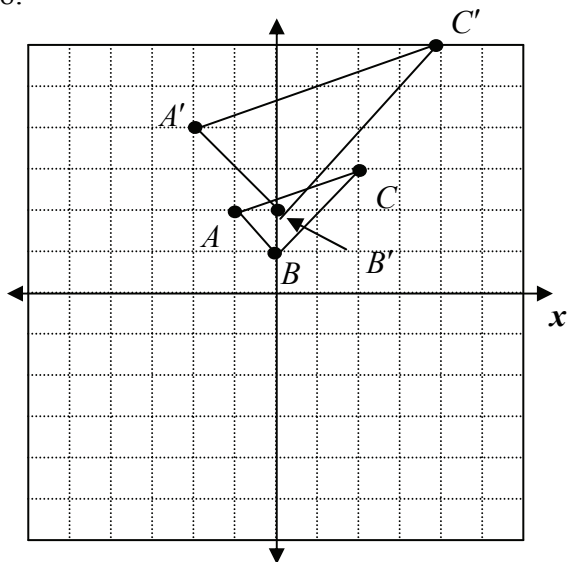
- a. *The triangles are similar by the AA similarity postulate. Since $\overline{AB} \parallel \overline{DE}$, $\angle A \approx \angle E$ because they are alternate interior angles of 2 parallel lines cut by a transversal, $\angle B \cong \angle D$*
- b. *The triangles are similar by the SAS similarity postulate. The angles at C are congruent vertical angles. The ratio of corresponding sides $BC:CD = 14:21 = 2:3$, which is the same ratio as the ratio of the corresponding sides $AC:CE$.*
- c. *The triangles are not similar. The corresponding sides are proportional, but the angle C is NOT the included angle.*

45. 25 : 49

46. 4 : 9

47. C

48.



a. *The triangle is right.*

$$AB = \sqrt{2}, BC = \sqrt{8}, AC = \sqrt{10}$$

Since $AC^2 = BC^2 + AB^2$, by the converse of the Pythagorean theorem, the triangle is right. It's area is $\frac{1}{2} \cdot \sqrt{2} \cdot \sqrt{8} = \frac{1}{2} \sqrt{16} = \frac{1}{2} \cdot 4 = 2$

b. $A'(-2, 4), B'(0, 2), C'(4, 6)$

c. *The ratio of the areas of the image to the pre-image is 4:1. Since the linear dimensions doubled, the area increases by a factor of 4.*

49. 4

50. D

51. B

52. C

53. 6

54. *Sample responses:* $\frac{HK}{GK} = \frac{GK}{FK}, \frac{GK}{FG} = \frac{GH}{FH}, \frac{GK}{GH} = \frac{FG}{FH}$

55. A

56. C

57. 62°

58. 23°

59. 46°

60. 52°

61. 75°

62. 23°

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63.

$$m\angle 1 = 90^\circ \quad m\angle 2 = 50^\circ \quad m\angle 3 = 90^\circ$$

$$m\angle 4 = 50^\circ \quad m\angle 5 = 60^\circ$$

$$m\angle 6 = 90^\circ \quad m\angle 7 = 30^\circ \quad m\angle 8 = 20^\circ$$

$$m\angle 9 = 90^\circ \quad m\angle 10 = 40^\circ$$

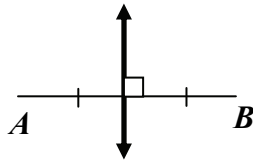
64. $20\pi \approx 62.83 \text{ cm}^2$

65. $16\pi - 32 \approx 18.27 \text{ cm}^2$

66. $108\pi - 81\sqrt{3} \approx 198.996 \text{ cm}^2$

67. a. $OW = 6$ b. $LM = 16$

68. *A line that is the perpendicular bisector of \overline{AB}*



69. *A plane that is the perpendicular bisector of \overline{AB}*

70. *A*

71. *C*

72. *7.71*

73. *24.63*

74. *39.47^\circ*

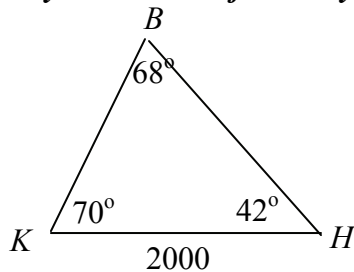
75. *33.06^\circ*

76. *28.96^\circ*

77. *3293.32 ft*

78.

a. *Kyle is 1443.36 feet away, Holly is 2026.98 feet away.*



Find HB by the Law of Sines

$$\frac{\sin 68^\circ}{2000} = \frac{\sin 70^\circ}{HB}$$

$$HB = \frac{2000 \sin 70^\circ}{\sin 68^\circ} \approx 2026.98$$

Find BK by the Law of Sines

$$\frac{\sin 68^\circ}{2000} = \frac{\sin 42^\circ}{BK}$$

$$BK = \frac{2000 \sin 42^\circ}{\sin 68^\circ} \approx 1443.36$$

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b. 1356.31 ft high

Draw an altitude from point B to segment KH . Using right triangle trigonometry,

$$\sin 70^\circ = \frac{h}{1443.36}$$

$$h = 1443.36 \sin 70^\circ = 1356.31$$

79. 2.57 miles

Let d = the distance between Farreed and Kim. Using the Law of Cosines,

$$d^2 = 3^2 + 4^2 - 2 \cdot 3 \cdot 4 \cos 40^\circ$$

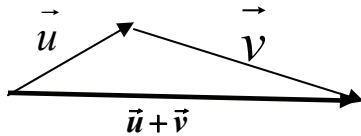
$$d^2 = 6.6149\dots$$

$$d \approx 2.57$$

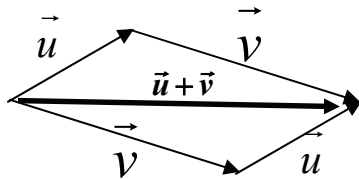
80. 90°

81. -1

82. *Head to Tail*



Parallelogram



83. a. $\sqrt{52} = 2\sqrt{13} \approx 7.21\text{mph}$ b. 33.69°