GEOMETRY Honors FINAL EXAM REVIEW ANSWERS 2022

Unit 1 Parallel Lines/Angles

1. False- parallel or coinciding lines
2. False- $CE = DE$

3. $x = 50$
4. $x = 15$
5. $x = 43,\ y = 77$
6. $x = 17.5,\ y = 28.5$
7. a
8. c
9. d
10. $x = 97,\ y = 96$
11. $x = 73,\ y = 41$
12. $x = 25,\ y = 10$
13. $m\angle 1 = 42°,\ m\angle 2 = 138°,\ m\angle 3 = 138°,\ m\angle 4 = 42°,\ m\angle 5 = 42°,\ m\angle 6 = 48°,\ m\angle 7 = 42°,\ m\angle 8 = 48°,\ m\angle 9 = 132°,\ m\angle 10 = 132°,\ m\angle 11 = 48°$
14. a. $e = 54°,\ f = 68°$
    b. $i = 114°$
15. $m\angle A = 23°,\ m\angle B = 157°,\ m\angle C = 67°$

Unit 2 Triangles

1. $x = 3,\ m\angle NMO = 16°$
2. $m\angle ZYV = 16.4°,\ m\angle XYZ = 32.8°$
3. $x = 4,\ x = -\frac{5}{2}$ (not a solution)
4. a. $x = 23°$
   b. $x = 22°$
   c. $y = 5°$
   d. $m\angle 2 = 20°,\ m\angle 3 = 40°,\ m\angle 4 = 40°,\ m\angle 5 = 60°$
   e. $x = 30°,\ y = 120°$
   f. $x = 3°$ or $-\frac{11}{2}$
   g. $x = 5,\ y = 3$
   h. $x = 9$
   i. $x = 3$ or $2,\ y = 124°$
5. $x = 40°,\ y = 6$ or -5
6. $\left(\frac{1}{2}, \frac{11}{2}\right)$
7. $(7, -8)$

Unit 3 Congruent & Similar Triangles

1. a. yes $ASA \cong$
   b. yes $ASA \cong$
   c. not $\cong$ (SS not a valid rule)
   d. not $\cong$ (SSA not a valid rule)
   e. not $\cong$
   f. yes $HL \cong$
   g. not $\cong$ (AAA not a valid rule)

2. $x = 7,\ WI = 57$ u
3. a. $x = 18°,\ m = 18$
   b. $x = -2$ or $\frac{8}{3}$

4. d

5. a. yes $AA\sim\ \Delta ABE \sim \Delta CDE$
   b. not similar; sides not proportional
   c. not similar; SSA not a valid rule
   d. not similar; sides not proportional
   e. yes $SSS\sim\ \Delta ABC \sim \Delta DEF$
   f. not similar; angles not congruent

6. 22 ft
7. a. $x = 17.5$
   b. $m = 24,\ x = 70°$
   c. $x = 2.8$
8. $x = 2,\ y = 1$

9. a. $x = 10$
   b. $x = \sqrt{70},\ y = \sqrt{21},\ z = \sqrt{30}$
   c. $x = 5$
   d. $x = 10$
   e. $x = 2\sqrt{10}$
   f. $x = \sqrt{5}$

10. $x = 19$ cm, $y = 15$ cm
11. 10.8 u

12. a. neither; slopes are not the same and they are not opposite reciprocals $\frac{8}{5}, -\frac{8}{5}$

b. parallel; same slopes $\frac{5}{3}$

13. a. not a right triangle- no opposite reciprocal slopes scalene- no congruent sides

b. right triangle- $\overline{TR} \perp \overline{TI}$ because opposite reciprocal slopes -2 and $\frac{1}{2}$
isosceles- $\overline{TR} \cong \overline{TI}$ because both sides measure $\sqrt{20}$

Unit 4 Solving Right Triangles

1. a. $x = 41$
b. $x = 56$
c. $x = 8\sqrt{3}$
d. $x = 3\sqrt{2}$
e. $x = 62°$
f. $x = 32$
g. $p = 22\sqrt{2}$
h. $x = 13\sqrt{3}$
i. $x = 49°$
j. $x = 7.22$
k. $x = 9.43$

2. a. right; $2500 = 2500$
b. obtuse; $81 > 80$
c. obtuse; $36 > 28$

3. a. $x = 16.97,\ y = 77.36,\ z = 94.33$
b. $x = 16.25,\ y = 73.95,\ z = 90.20$
c. $x = 2\sqrt{2},\ y = 2\sqrt{6}$
d. $x = 3\sqrt{3}$
e. $x = 4\sqrt{3}$

4. $36\sqrt{3}$ ft^2
5. $300\sqrt{3}$ yd^2
6. 93 ft
7. 64.6 ft
8. Angle measures are 18° and 72°. Ladder is about 16.2 ft.
9. 37.7 ft

Unit 5 Circles

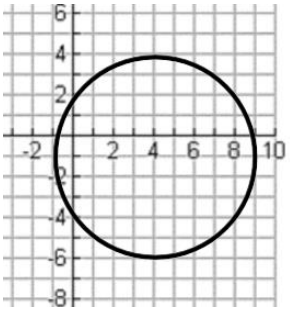
1. a. 144°
b. 134°
c. 98°
d. 23°
e. 49°
f. 49°

2. a. 12
b. 78°
c. 300°
d. 60°

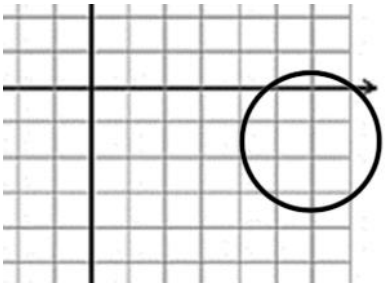
3. $\frac{176\pi}{9}$ mm

4. a. 5π cm
b. $\frac{5\pi}{2}$ ft
5. 20 u
6. 4.8 m

7. $(x-4)^2 + (y+1)^2 = 25$
center: $(4, -1)$ $r = 5$



8. $(x-12)^2 + (y+3)^2 = 16$
center: $(12, -3)$ $r = 4$



count by 2s

9. a. 78.62 u^2
b. 31.81 cm^2
c. 21.11 in^2
d. 23.56 u^2

10. $(x-2)^2+(y-7)^2=26$
11. $(x-8)^2+(y+2)^2=85$

Unit 6 Polygons & Quadrilaterals

1. 720°
2. 20 sides
3. 9 sides
4. 10 sides
5. 30 sides
6. a. $x=96°$
b. $x=25°$
c. $a=b=103°,\ c=97°,\ d=83°,$
$e=154°$
7. $x=60,\ m\angle A=65°$
8. $m\angle A=54°$
9. rhombus, all sides ≅
10. $AB=8$ u, all sides ≅
11. 100°, consecutive angles are supp
12. $m\angle G=70°$

13. a. never- Parallelogram has two pairs of opposite ‖ sides, while trapezoid only has one.
b. always- Square has all properties of rhombus.
c. sometimes- When all sides are congruent and it's a square.
d. sometimes- When it's a rectangle.
e. always
14. $EF=20$ or 16.5 units
15. $x=12,\ y=4,$
Diagonals bisect each other.
16. $x=8\ or\ -\frac{3}{2},$
Opposite sides are congruent.
$y=13,$
Consecutive angles are supplementary.

17. $3x-5=2y+5$
Diagonals are congruent.

12. a. 112°
b. 120°

13. a. $2\sqrt{34}$
b. 125°
c. $4\sqrt{13}$
d. 8, 106°

$x+5=4y-5$
Opposite sides are congruent.
$x=6,\ y=4,\ JL=13$ u, $KL=11$ u
18. 279.9 cm^2
19. 36 ft^2
20. $2(2x^2-10x-60)=x^2+9x-110$
diagonals bisect opposite angles and opposite angles are ≅
$x=10$ ($x=-\frac{1}{3}$ doesn't work)
$m\angle MRH=100°$
21. a. 5 u
b. 3 u
c. 3 u
d. 8 u
e. 106°
f. 90°
g. 53°
h. 74°

22. a. $m\angle 1=90°,\ m\angle 2=58°,\ m\angle 3=58°,$
$m\angle 4=32°$
b. $m\angle 1=m\angle 2=m\angle 3=m\angle 4=38°$
23. a. 966 $units^2$
b. 254 in^2
24. $160\sqrt{5}$ $units^2$
25. x = 30, diagonals bisect each other and rectangles have congruent diagonals
26. f=78 consecutive angles supplementary, g=3.5 opposite sides congruent
27. 216.9 $units^2$
28. 35.78 m^2
29. 946.37 in^2
30. $49\sqrt{3}$ in^2
31. 30.90 in^2

32. a. 21.4 ft^2
b. 498.8 in^2 c. $192\sqrt{3}\approx 332.55$ cm

Unit 7 Surface Area & Volume

1. a. SA = 472 ft^2 V = 672 ft^3
   b. SA=192π cm^2 V=256π cm^3
   c. SA = 324π in^2 V=972π in^3
   d. SA = 240 + 50$\sqrt{3}$ in^2 V=200$\sqrt{3}$ in^3
   e. SA = 36$\sqrt{337}$ in^2 V = 1728 in^3
   f. SA = 75π ft^2 V= 108 π ft^3

2. a. SA ≈ 725.32 ft^2 V ≈ 1436.76 ft^3
   b. SA ≈ 138.23 cm^2 V ≈ 96.25 cm^2

3. 11 m

4. r ≈ 4.33 in, SA = 141.99 in^2
5. 16π in^2
6. 3 cm
7. 11,494.04 cm^3
8. 1296π ft^2
9. $\frac{500\pi}{3}$ cm^3
10. a. SA = $12\pi + 2\pi\sqrt{104} \approx 101.76$ in^2
    V = $\frac{56\pi}{3} \approx 58.64$ in^3
    b. SA = $(126 + 54\sqrt{3})$ ft^2 ≈ 250.45 ft^2
    V = $126\sqrt{3}$ ft^3 ≈ 218.24 ft^3
11. $24\sqrt{3}x$ in^3

Proofs

1.

STATEMENTS	**REASONS**
$\overline{AD} \cong \overline{BC}; \overline{AB} \cong \overline{DC};$	Given
$\overline{AC} \cong \overline{AC}$	Reflexive prop of ≅
$\Delta ACD \cong \Delta CAB$	SSS ≅ postulate
$\angle ACD \cong \angle CAB$	CPCTC
$\overline{AD} \parallel \overline{BC}$	Converse of Alt. Int. angles theorem

2.

STATEMENTS	**REASONS**
$p \parallel q,\ \angle 1 \cong \angle 2$	Given
$\angle 3 \cong \angle 1$	Corr. Angles postulate
$\angle 3 \cong \angle 2$	Substitution/ transitive prop
$l \parallel m$	Converser of alt. ext. angles theorem

3.

STATEMENTS	**REASONS**
$l \parallel m$	Given
$\angle 1 \cong \angle 3$	Alt. Ext. angles theorem
$m\angle 1 \cong m\angle 3$	Def. of Congruence
$\angle 2$ and $\angle 3$ are a linear pair	Def. of linear pair
$\angle 2$ and $\angle 3$ are a supplementary	Linear pair postulate
$m\angle 2 + m\angle 3 = 180°$	Def. of Supplementary
$m\angle 2 + m\angle 1 = 180°$	Substitution
$\angle 1$ and $\angle 2$ are a supplementary	Def. of Supplementary

4.

STATEMENTS	**REASONS**
$\overline{XY} \cong \overline{XW}; \overline{XZ}$ bisects$\angle$ YXW;	Given
$\angle YXZ \cong \angle WXZ$	Def. of angle bisector
$\overline{XZ} \cong \overline{XZ}$	Reflexive prop of ≅
$\Delta ZYX \cong \Delta ZWX$	SAS ≅ postulate

5.

STATEMENTS	**REASONS**
X is the midpoint of $\overline{MN}$; MX = RX	Given
$\overline{MX} \cong \overline{XN}$	Defn. of midpoint
MX = XN	Defn. of congruent segments
XN = RX	Substitution POE

6.

STATEMENTS	**REASONS**
m∠1 + m∠3 = 180	Given
∠2 & ∠3 form a linear pair	Defn. of linear pair
∠2 & ∠3 are suppl. ∠s	Linear Pair Postulate
m∠2 + m∠3 = 180	Def of Supplementary
m∠1 + m∠3 = m∠2 + m∠3	Substitution
m∠1 = m∠2	Subtraction
$\angle 1 \cong \angle 2$	Def of Congruence

7.

STATEMENTS	**REASONS**
$\angle 1 \cong \angle 3$; $\angle 2 \cong \angle 4$	Given
m∠1=m∠3; m∠2=m∠4	Defn. congruent angles
m∠1 + m∠2 = m∠ABC m∠3 + m∠4 = m∠BCD	Angle Addition Postulate
m∠3 + m∠4 = m∠ABC	Substitution POE
m∠ABC = m∠BCD	Substitution POE
$\angle ABC \cong \angle BCD$	Defn. congruent angles

8.

STATEMENTS	**REASONS**
$\overline{AE} \perp \overline{BE}$; $\overline{CD} \perp \overline{BD}$; $\overline{AC} \square \overline{ED}$; ∠BED ≅ ∠BDE	Given
∠AEB and ∠BEC are right angles	Def. of Perpendicular Lines
$\angle AEB \cong \angle BEC$	All right angles are congruent
$\overline{BE} \cong \overline{BD}$	Conv. Isosc. Δ Thm.
$\angle ABE \cong \angle BED$; $\angle BDE \cong \angle CBD$	Alt. Int. ∠s Thm
$\angle ABE \cong \angle CBD$	Transitive .POC/Substitution
Δ∠ABE ≅ ΔCBD	ASA Postulate
$\overline{AB} \cong \overline{BC}$	CPCTC
B is the midpoint of $\overline{AC}$	Defn. midpoint

9.

STATEMENTS	**REASONS**
∠2 is supplementary to ∠3; $\overline{AD} \parallel \overline{BC}$	Given
∠1 and ∠2 form a linear pair	Def. of Linear Pair
∠1 and ∠2 are supplementary	Linear Pair Postulate
$\angle 1 \cong \angle 3$	Congruent Supplements Thm
$m\angle 1 = m\angle 3$	Def. of Congruent Angles
∠3 and ∠4 are same side interior angles	Def. of SSIA
∠3 and ∠4 are supplementary	SSIA Theorem
$m\angle 3 + m\angle 4 = 180°$	Def. of supplementary
$m\angle 1 + m\angle 4 = 180°$	Substitution POE