Key
'18 - '19

Geometry Honors
Review for Midterm Exam

Chapters 1-5 & 7*(skip 3-6)*

Format of Midterm Exam:

Scantron Sheet: Always/Sometimes/Never and Multiple Choice
40 Questions @ 1 point each = **40** pts.

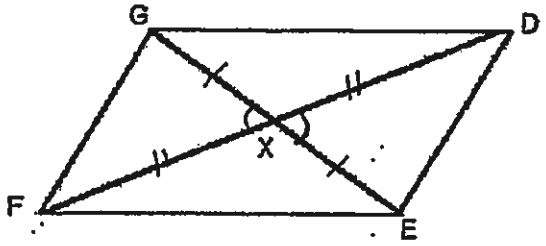
Free Response: Show all work and write answers on the line
18 Questions @ 1, 2, 3 or 4 points each = **40** pts.

Proofs: 2-column proofs.
2 Proofs at 10 points each = **20** pts.

100 points total

Proof Practice! **Write a 2-column deductive proof for #1-5.**

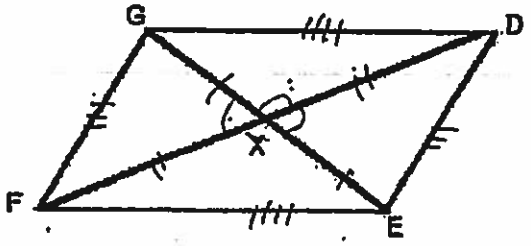
1. Given: X is the midpoint of $\overline{GE}$ and $\overline{DF}$
   Prove: $\Delta DEF \cong \Delta FGD$



Statements	Reasons
1. X is mdpt. of $\overline{GE}$ + $\overline{DF}$	1. Given
2. $\overline{GX} \cong \overline{XE}$; $\overline{FX} \cong \overline{XD}$	2. def. mdpt.
3. $\angle GXF \cong \angle DXE$	3. Vert. $\angle$s $\cong$
4. $\Delta GXE \cong \Delta EXD$	4. SAS
5. $\angle GFX \cong \angle EDX$; $\overline{FG} \cong \overline{DE}$	5. CPCTC
6. $\overline{FD} \cong \overline{FD}$	6. Reflexive
7. $\Delta DEF \cong \Delta FGD$	7. SAS
OR	
1. X is mdpt. of $\overline{GE}$ + $\overline{DF}$	1. Given
2. $\overline{FD}$ + $\overline{GE}$ bisect each other	2. def. mdpt.
3. FGDE is $\square$	3. diag. bis. $\rightarrow \square$
4. $\overline{FG} \cong \overline{ED}$; $\overline{GD} \cong \overline{FE}$	4. $\square \rightarrow$ opp. sides $\cong$
5. $\overline{FD} \cong \overline{ED}$	5. Reflexive
6. $\Delta DEF \cong \Delta FGD$	6. SSS

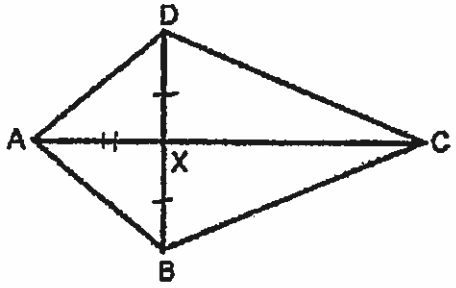
Proof Practice! **Write a 2-column deductive proof for #1-5.**

1. Given: X is the midpoint of $\overline{GE}$ and $\overline{DF}$
   Prove: $\Delta DEF \cong \Delta FGD$



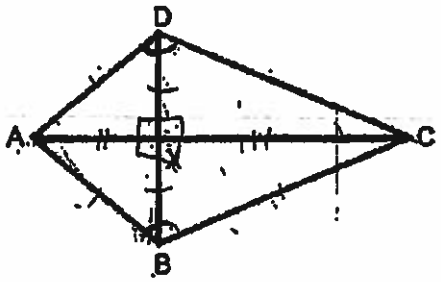
	Statements	Reasons
1.	X is the MP of $\overline{GE}$ & $\overline{DF}$	given.
2.	DEFG is a ▱	If Diag. bis each other, Quad is a ▱.
3.	$\overline{GF} \cong \overline{ED}$	Opp sides of ▱ are ≅.
4	$\overline{GD} \cong \overline{EF}$	"
5	$\overline{FD} \cong \overline{DF}$	Ref prop
6.	$\Delta DEF \cong \Delta FGD$	SSS post.

2. Given: $\overline{AX}$ is an altitude and a median of ΔDAB
Prove: $\angle ABC \cong \angle ADC$



Statements	Reasons
1. $\overline{AX}$ is an alt. + median of ΔDAB	1. Given
2. X is mdpt. of $\overline{DB}$	2. def. median
(S) 3. $\overline{DX} \cong \overline{BX}$	3. def. mdpt.
4. $\overline{AX} \perp \overline{DB}$	4. def. alt.
5. $\angle AXD$ & $\angle AXB$ rt. $\angle$s	5. def. $\perp$
(A)(S) 6. $\overline{AX} \cong \overline{AX}$ → (SAS) $\angle AXD \cong \angle AXB$ - rt. $\angle$s $\cong$	6. Reflexive
7. $\Delta AXD \cong \Delta AXB$	7. SAS
(A)(S) 8. $\angle DAX \cong \angle BAX$; $\overline{AD} \cong \overline{AB}$	8. CPCTC
(S) 9. $\overline{AC} \cong \overline{AC}$	9. Reflexive
10. $\Delta ACD \cong \Delta ACB$	10. SAS
11. $\angle ABC \cong \angle ADC$	11. CPCTC
OR	
#5. $\angle AXD \cong \angle AXB$ (saves a step)	5. $\perp$ lines → $\cong$ adj. $\angle$s

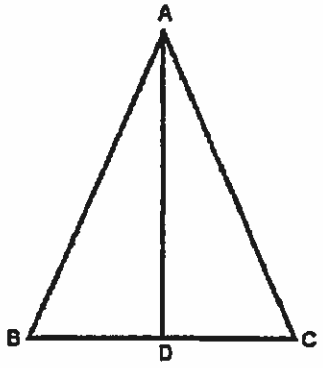
2. Given: $\overline{AX}$ is an altitude and a median of ΔDAB
Prove: $\angle ABC \cong \angle ADC$



	Statements	Reasons
1.	$\overline{AX}$ is an Alt and Med of $\triangle DAB$	given
2.	$\angle DXA, \angle BXA, \angle CXB, \angle CXD$ are rt $\angle$s.	Def of altitude.
3.	$\overline{DX} \cong \overline{BX}$	def of Median.
4	$\overline{AX} \cong \overline{AX}$.	Ref prop.
5	$\triangle DXA \cong \triangle BXA$	SAS post.
6	$\overline{AD} \cong \overline{AB}$	CPCTC.
7	$\overline{CX} \cong \overline{CX}$	Ref prop.
8	$\triangle DXC \cong \triangle BXC$	SAS post
9	$\overline{DC} \cong \overline{BC}$	CPCTC.
10	$\overline{AC} \cong \overline{AC}$	Reflex prop.
11	$\triangle ADC \cong \triangle ABC$	SSS post
12	$\angle ABC \cong \angle ADC$.	

3: Given: ΔABC is isosceles with $\overline{AD}$ bisecting the vertex A

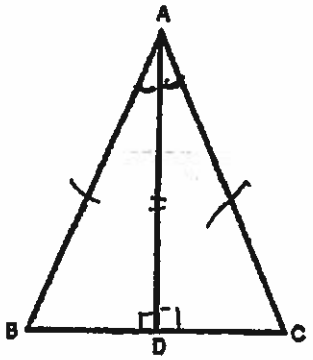
Prove: $\overline{BD} \cong \overline{CD}$ and $\overline{AD}$ is an altitude of ΔABC



Statements	Reasons	
1. ΔABC is isosc. ; $\overline{AD}$ bisects vertex A	1. Given	
2. $\overline{AD} \perp \overline{BC}$.; D is mdpt. of $\overline{BC}$	2. Segment that bisects vertex $\angle$	(Thm. 4-1 Corr.:
	of isosc. Δ is $\perp$ to base at mdpt.	
3. $\overline{BD} \cong \overline{DC}$	3. def. mdpt.	
4. $\overline{AD}$ is altitude of ΔABC	4. def. Alt.	
OR (longer)		
• $\cong \Delta$'s by SAS or ASA		
• CPCTC		
• $\cong$ adj. $\angle$'s $\rightarrow \perp$ lines $\rightarrow$ altitude		

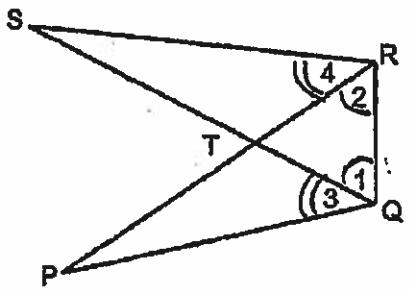
3. Given: ΔABC is isosceles with $\overline{AD}$ bisecting the vertex A

Prove: $\overline{BD} \cong \overline{CD}$ and $\overline{AD}$ is an altitude of ΔABC



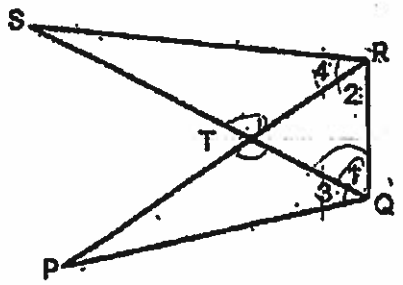
	Statements	Reasons
1.	ΔABC is Isos Δ	given
2.	$\overline{AB} \cong \overline{AC}$	def of Isos. Δ.
3.	$\overrightarrow{AD}$ bisects vertex A	given
4.	$\angle BAD \cong \angle CAD$	def of $\angle$ bis.
5	$\overline{AD} \cong \overline{AD}$	Reflex prop.
6	$\Delta ABD \cong \Delta ACD$	SAS post.
7	$\overline{BD} \cong \overline{CD}$	CPCTC.
8	$\angle ADB \cong \angle ADC$	CPCTC.
9	$\angle ADB$ & $\angle ADC$ are RT$\angle$s.	$\cong$ adj. supple. $\angle$s are RT$\angle$s.
10	$\overline{AD}$ is an Alt. of ΔABC.	def of Alt.

4. Given: $\angle 1 \cong \angle 2; \angle 3 \cong \angle 4$
Prove: $ST = PT$



Statements	Reasons
1. $\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 4$	1. Given
2. $\overline{RT} \cong \overline{QT}$	2. Conv. of isosc. Δ Thm.
3. $\angle STR \cong \angle PTQ$	3. Vert. $\angle$'s $\cong$
4. $\Delta STR \cong \Delta PTQ$	4. ASA
5. $\overline{ST} \cong \overline{PT}$	5. CPCTC
6. $ST = PT$	6. def. $\cong$

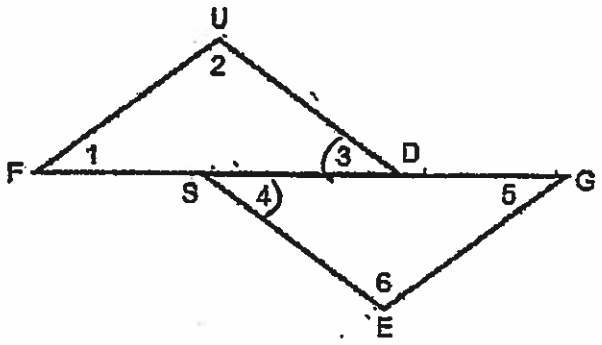
4. Given: $\angle 1 \cong \angle 2; \angle 3 \cong \angle 4$
Prove: $ST = PT$



	Statements	Reasons
1.	$\angle 1 \cong \angle 2$, $m\angle 1 = m\angle 2$	
	$\angle 3 \cong \angle 4$ $m\angle 3 = m\angle 4$	given.
2.	$m\angle SRQ = m\angle 4 + m\angle 2$	$\angle$ add post.
	$m\angle PQR = m\angle 3 + m\angle 1$	$\angle$ add post
3.	$m\angle SRQ = m\angle 3 + m\angle 1$	Subst prop. 1 into 2.
4	$m\angle SRQ = m\angle PQR$, $\angle SRQ \cong \angle PQR$	Subst prop 2 and 3.
5	$\overline{RQ} \cong \overline{RR}$	Reflex prop.
6	$\triangle SRQ \cong \triangle PQR$	ASA post.
7	$\overline{SR} \cong \overline{PQ}$	CPCTC.
8	$\angle STR \cong \angle PTQ$	VA Theo.
9	$\triangle STR \cong \triangle PTQ$	AAS Theo.
10	$\overline{ST} \cong \overline{PT}$, $ST = PT$	CPCTC.

5. Given: FS = DG; $\overline{UD} \parallel \overline{SE}$, UD = SE

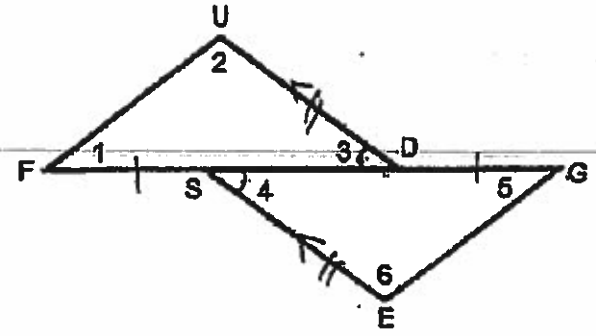
Prove: $m\angle 2 = m\angle 6$



Statements	Reasons
1. FS = DG ; UD = SE	1. Given
2. FS + SD = FD ; DG + SD = GS	2. Seg. add'n post.
3. SD = SD	3. Reflexive
4. FS + SD = DG + SD	4. Add'n Prop. =
5. FD = GS	5 subst.
(S)(S) 6. $\overline{FD} \cong \overline{GS}$; $\overline{UD} \cong \overline{SE}$	6. def. $\cong$
7. $\overline{UD} \parallel \overline{SE}$	7. Given
(A) 8. $\angle 3 \cong \angle 4$	8. $\parallel$ lines → alt. int. $\angle$s $\cong$
9. $\triangle UDF \cong \triangle ESG$	9. SAS
10. $\angle 2 \cong \angle 6$	10. CPCTC
11. $m\angle 2 = m\angle 6$	11 def. $\cong$

5. Given: FS = DG; $\overline{UD} \parallel \overline{SE}$, UD = SE

Prove: $m\angle 2 = m\angle 6$



	Statements	Reasons
1.	$\overline{FS} = \overline{DG}$	given
2.	$FD = FS + SD$	Seg add post
	$GS = DG + SD$	=
3	$GS = FS + SD$	Subst prop 1 & 2.
4	$FD = GS$, $\overline{FD} \cong \overline{GS}$	subst prop 2 & 3.
5	$\overline{UD} \parallel \overline{SE}$	given.
6	$\angle 3 \cong \angle 4$	AIA Theo.
7	$UD = SE$, $\overline{UD} \cong \overline{SE}$	given
8	$\triangle FUD \cong \triangle GES$	SAS post.
9	$\therefore \angle 2 \cong \angle 6$, $m\angle 2 = m\angle 6$	CPCTC.

True/False Practice: Write "True" or "False" on the line next to each statement.
(hint! Good practice for A/S/N Questions!)

1.	Two lines parallel to the same line must be parallel.	true
2.	A line parallel to a plane is parallel to every line in the plane.	false
3.	Two lines perpendicular to the same line must be parallel.	false
4.	In a plane, two lines perpendicular to the same line must be parallel.	true
5.	Two lines which lie in parallel planes must be skew.	false
6.	In a plane, if a line intersects one of two parallel lines, then it must intersect the other.	true
7.	Two points can lie in each of two different lines.	false
8.	Three noncollinear points can lie in each of two different planes.	false
9.	Three collinear points lie in only one plane.	false
10.	Two intersecting lines are contained in exactly one plane.	true
11.	If two lines intersect, then they intersect in exactly one point.	true
12.	If two planes intersect, then their intersection is a line.	true
13.	The diagonals of a parallelogram are congruent.	false
14.	Each interior angle of a regular pentagon is 120°.	false
15.	An equiangular quadrilateral cannot be equilateral.	false
16.	The diagonals of an isosceles trapezoid are congruent.	true

Multiple Choice Practice: Circle the letter of the correct answer.

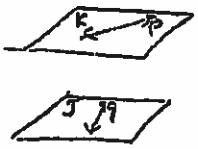
17. A and B are regular polygons and A has 2 more sides than B. The measure of each interior angle of A is 6 greater than the measure of each interior angle of B. How many sides does A have?

a. 6 b. 8 c. 10 d. 12

# sides	int. ∠
6	120
8	135
(B) 10	144
(A) 12	150

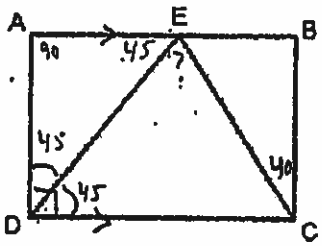
diff. of 6

18. Planes K and J are parallel. Line p lies in plane K and line q lies in plane J. Which of the following statements must be true?



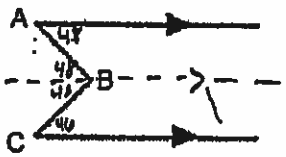
a. p and q are always parallel
b. p and q are sometimes parallel
c. p and q are never parallel
d. p and q are always coplanar
e. p and q sometimes intersect

19. $\overline{AD} \perp \overline{DC}$, $\overline{AB} \parallel \overline{DC}$, $\overline{DE}$ bisects $\angle ADC$ and $m\angle ECB = 40°$. Find $m\angle DEC$.



a. 90° b. 95°
c. 85° d. cannot be determined

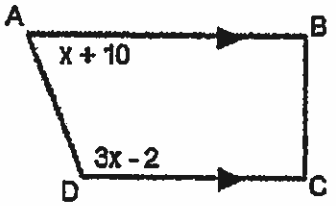
20. Find $m\angle ABC$ if $m\angle A = 48°$ and $m\angle C = 46°$.



a. 94° b. 86°
c. 84° d. cannot be determined

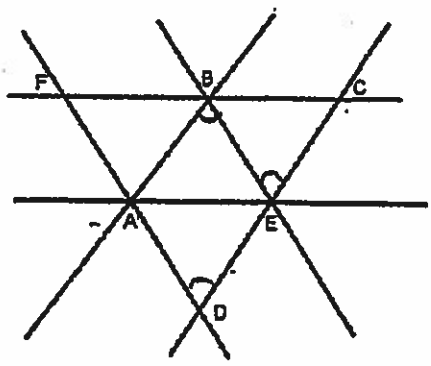
21. Find $m\angle ADC$.

$x + 10 + 3x - 2 = 180$
$4x + 8 = 180$
$4x = 172$
$x = 43$
$3(43) - 2 =$



a. 53° b. 43°
c. 137° d. 127°

22. In the figure, $m\angle ABE = m\angle EDF = m\angle BEC$. Which of the following pairs of lines must be parallel?



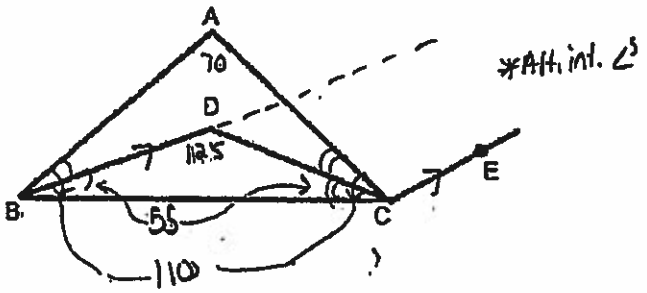
I. $\overline{AB}$ and $\overline{CD}$ (alt-int.) ✓ II. $\overline{BE}$ and $\overline{DF}$ (corr.) ✓ III. $\overline{AE}$ and $\overline{CF}$

a. I only b. II only
c. III only d. I and II only
e. I and III only

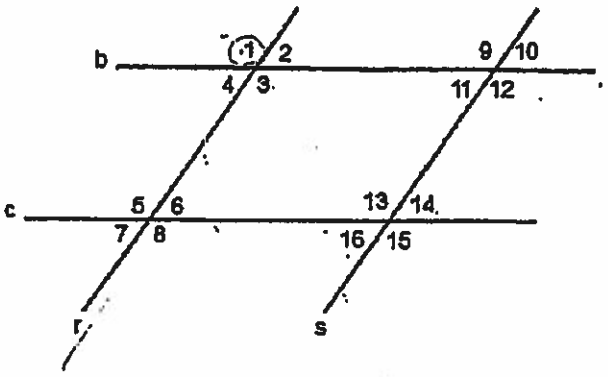
23. In ΔABC, $\overline{BD}$ and $\overline{CD}$ are angle bisectors, and $\overline{CE} \parallel \overline{BD}$. If m $\angle BAC = 70°$, what is m $\angle DCE$?

a. 70° b. 105°

c. 125° d. 153.5°



Use the diagram to the right for # 24 – 27.



24. If r||s, then $\angle 1 \cong$ ___?

a. $\angle 9$ b. $\angle 11$

c. $\angle 5$ d. $\angle 9$ and $\angle 5$

25. If $\angle 11 \cong \angle 14$, then___?

a. b||c b. r||s

c. b||c and r||s d. none of these

26. If $\angle 3 \cong \angle 12$, then ___?

a. b||c b. r||s

c. b||c and r||s d. none of these

27. If b||c, then $\angle 6$ must be ___ to $\angle 3$?

a. congruent b. supplementary

c. congruent and supplementary d. adjacent e. congruent and adjacent

28. If two angles of a triangle measure 47 and 93, then the measure of the third angle is ___?

a. 46 b. 30 c. 50 d. 60 e. none of these

29. The sum of the measures of the exterior angles, one at each vertex, of a convex octagon is ___?

a. 135 b. 1080 c. 45 d. 360 e. none of these

30. Find the measure of each interior angle of a regular polygon with 10 sides. $\frac{(10-2)180}{10}$

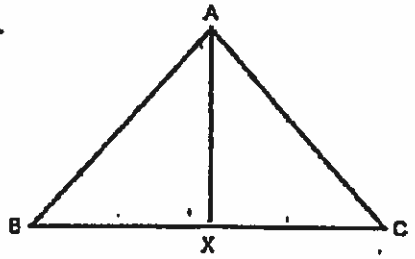
(a) 144 b. 180 c. 36 d. 360 e. none of these

For examples 31 – 34, circle the postulate or theorem that justifies the conclusion.

31. If $\overline{AX} \perp \overline{BC}$ and X is the midpoint of $\overline{BC}$, then $\triangle ABX \cong \triangle ACX$.

a. SSS (b.) SAS

c. ASA d. AAS e. HL



For #31-32

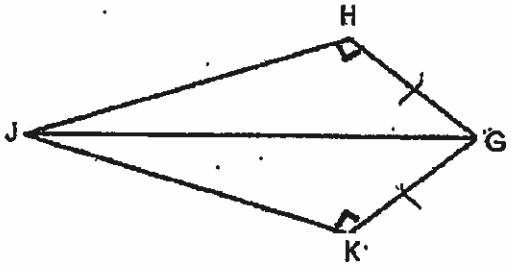
32. If $\overline{AX} \perp \overline{BC}$ and $\overline{AX}$ bisects $\angle BAC$, then $\triangle ABX \cong \triangle ACX$.

a. SSS b. SAS (c.) ASA d. AAS e. HL

33. If GH = GK and HJ = KJ, then $\triangle JHG \cong \triangle JKG$.

(a.) SSS (b.) SAS c. ASA

d. AAS (e.) HL



For ex. 33 - 34

34. If $\overline{GH} \perp \overline{HJ}$, $\overline{GK} \perp \overline{KJ}$, and GH = GK, then $\triangle GHJ = \triangle GKJ$.

a. SSS b. SAS c. ASA d. AAS (e.) HL

35. Which of the following statements is equivalent to the statement "p implies q"?

a. q implies p (b.) If p, then q. c. q only if p. d. p if q.

36. The measure of the supplement of an angle is 14 less than 3 times the measure of the complement. Find the measure of the complement.

$(180-n) = 3(90-n) - 14$

$180 - n = 270 - 3n - 14$

$2n = 76$

$n = 38$

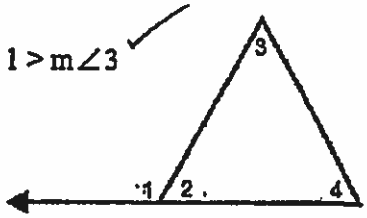
a. 38 (b.) 52 c. 142 d. 19

37. Which of these is true?

I. $m\angle 1 = m\angle 3 + m\angle 4$ ✓ II. $m\angle 1 > m\angle 2$ don't know! III. $m\angle 1 > m\angle 3$ ✓

a. I and II only b. II and III only

(c.) I and III only d. I, II and III

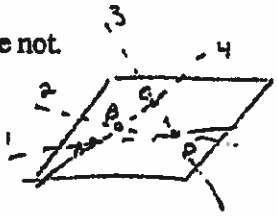


38. Which of the following triangles does not exist?

I. acute isosceles ✓ II. Right scalene
III. obtuse equilateral ✓ IV. obtuse scalene

a. I only b. II only c. III only d. II and III e. II, III, IV

39. Points A, B, C, and D are coplanar. A, B, and C are collinear but B, C, and D are not. How many different lines are determined by points A, B, C, and D?



a. 3 b. 4 c. infinitely many d. cannot be determined

40. j and k are intersecting lines. A and B are points on j, and C and D are points on k. How many planes contain points A, B, C, and D?

a. none b. exactly one c. infinitely many d. cannot be determined

41. Points M, A, T, H, and P are arranged on a line so that T is the midpoint of $\overline{HM}$, M is the midpoint of $\overline{HA}$, and P is the midpoint of $\overline{AT}$. Which of the following are true?

I. P is on $\overline{MA}$. II. M is on $\overline{TH}$. III. PH = TA

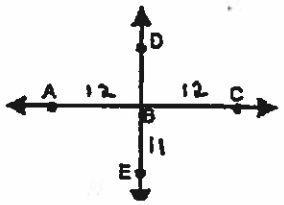
a. I only b. II only c. III only d. I and II only e. II and III only

42. In the figure, AC = 24, AB = 6x – 6, BC = 5x – 3, and BE = 3x + 2. Which do you know is true?

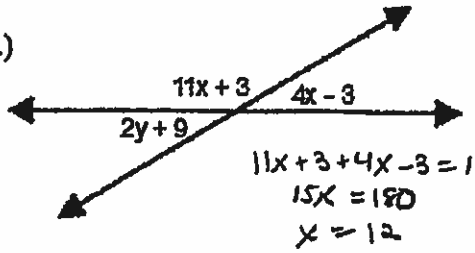
I. $\overline{AC}$ bisects $\overline{DE}$ ✓ II. $\overline{DE}$ bisects $\overline{AC}$ ✓ III. $\overline{DE}$ bisects $\overline{AC}$ ✗

a. I only b. II only c. III only
d. I and II only e. II and III only

$6x-6+5x-3=24$
$11x-9=24$
$11x=33$
$x=3$



43. Find the values of x and y. (The figure is not drawn to scale.)



a. x = 20, y = 34 b. x = 10, y = 52

c. x = 12, y = 18 d. x = 11, y = 7

$11x+3+4x-3=180$
$15x=180$
$x=12$

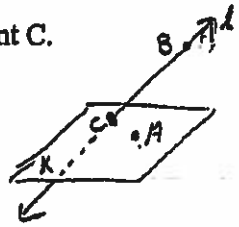
$2y+9=4(12)-3$
$2y=36$
$y=18$

44. Which of the following is the hypothesis of the given conditional?

if p, then q
"If I win, then I'll stay."

a. I'll stay. b. I win. c. If I stay, I won. d. I'll leave if I lose. e. I'll win if I stay.

45. Point A lies in plane K, but point B does not. A line l through B intersects K at point C. Which of the following must be true?



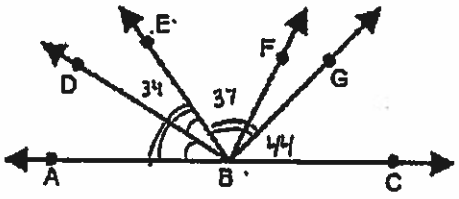
I. A, B, and C are coplanar. II. The midpoint of $\overline{AB}$ lies in plane K.
III. The midpoint of $\overline{AC}$ lies in plane K.

a. I only b. II only c. III only d. I and II only e. I and III only

46. In the figure, $\overline{BD}$ bisects $\angle ABE$, $\overline{BE}$ bisects $\angle ABG$, m$\angle EBF = 37$, and m$\angle CBG = 44$. Find m$\angle DBF$. (The figure is not drawn to scale.)

a. 68 b. 34

c. 82 d. 71



$m\angle ABG = 180 - 44 = 136$
$m\angle ABE = 68$
$m\angle DBE = 34$
$m\angle DBF = 34 + 37$

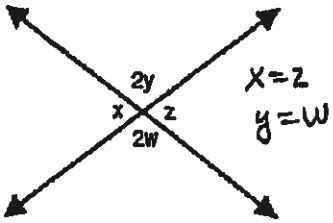
47. Which of the following expressions represents the average of x and z?

a. 180° - y b. 90° - y

c. 180° - 2y d. 90° - 2y e. y

$\frac{180 - 2y + 180 - 2w}{2}$

$180 - y - w$



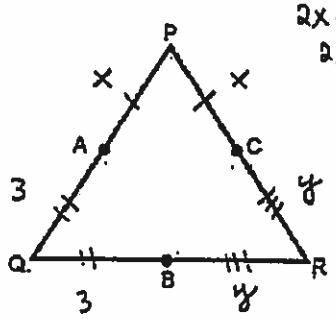
$x = z$
$y = w$

48. In ΔPQR: P is equidistant from A and C,
Q is equidistant from A and B,
R is equidistant from B and C.

If the perimeter of ΔPQR is 24 and AQ = 3, find PR.

a. 9 b. 10 c. 12

d. 15 e. 18

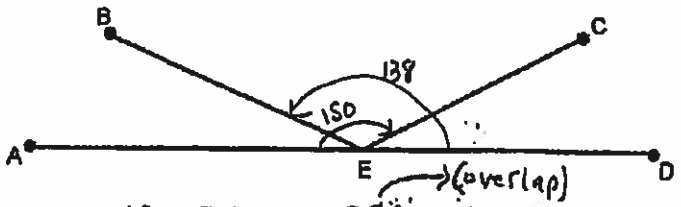


$2x + 2y + 6 = 24$
$2x + 2y = 18$
$x + y = 9$

49. The measure of $\angle AEC = 150$. The measure of $\angle DEB = 138$. Find the measure of $\angle BEC$.

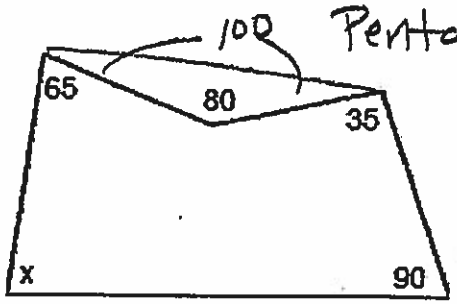
a. 72 b. 90

c. 96 d. 108 e. 120



$150 + 138 - m\angle BEC = 180$
$288 - m\angle BEC = 180$
$-m\angle BEC = -108$

50. Find x.



Pentagon = 540

a. 40° b. 50° c. 60°

d. 70° e. 80°

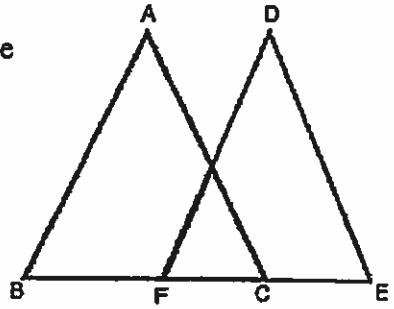
$X = 540 - 65 - 280 - 35 - 90 = 70$

51. If $\angle 1$ is supplementary to $\angle 2$, $\angle 3$ is supplementary to $\angle 4$, and $\angle 2 \cong \angle 4$, then:

a. $\angle 1 \cong \angle 3$ b. $\angle 1 \cong \angle 2$ c. $\angle 1 \cong \angle 4$

d. $\angle 1$ is supplementary to $\angle 3$ e. $\angle 2$ is supplementary to $\angle 4$

52. In the diagram, $\overline{AB} \cong \overline{DE}$ and $\angle A \cong \angle D$. In order to conclude that $\Delta ABC \cong \Delta DEF$ by SAS, it is necessary to know that:



a. $\angle B \cong \angle E$ b. $\angle ACB \cong \angle DFE$

c. $\overline{AC} \cong \overline{DF}$ d. $\overline{BC} \cong \overline{EF}$ e. $\overline{BF} \cong \overline{CE}$

53. Which of the following does not determine a plane?

a. two parallel lines b. three non-collinear points c. a line and a point not on the line

d. two perpendicular lines e. none of the above (they each determine a plane)

54. Each interior angle of a polygon has a measure of 160. The number of sides in the polygon is:

a. 9 b. 12 c. 18 d. 20 e. none of these

$\frac{(n-2)180}{n} = 160$

55. If the measure of an angle exceeds its supplement by 20, then the measure of the angle is:

a. 100 b. 80 c. 55 d. 35 e. 125

$(180 - X) + 20 = X$

56. In order to prove that a point lies on the perpendicular bisector of a segment, it is necessary to show:

a. the point is on the segment
b. the distances from the point to the endpoints of the segment are equal
c. the point is the midpoint of the segment
d. the point is the perpendicular bisector of the segment
e. all of these

57. If two angles are congruent and supplementary, the angles must be:

a. adjacent angles b. acute angles c. obtuse angles

d. straight angles e. right angles

58. If the vertex angle of an isosceles triangle is 40°, then each base angle is:

a. 70° b. 140° c. 40° d. 20° e. 50°

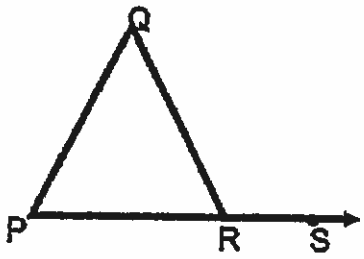
59. The altitudes of an equilateral triangle are

a. medians b. congruent c. angle bisectors d. all of these

60. In ΔPQR, $m\angle QRS = 2x + 20$, $m\angle P = 50$, and $m\angle Q = x + 20$. Find $m\angle QRP$.

a. 50 b. 60

c. 70 d. 120



61. A polygon with six sides is called a

a. hexagon b. heptagon c. octagon d. none of these

62. If the sum of the measures of the interior angles of a polygon is 540°, how many sides does the polygon have?

a. 4 b. 5 c. 6 d. none of these

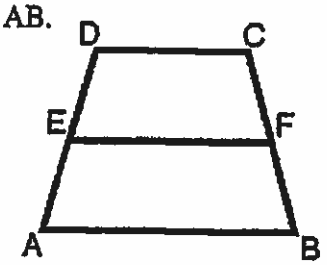
63. If a parallelogram has congruent diagonals, then it is a

a. trapezoid b. rhombus c. rectangle d. none of these

64. In trapezoid $ABCD$, $\overline{EF}$ is the median, DC = 9, and EF = 12. Find AB.

a. 11.5 b. 15

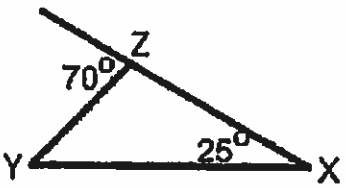
c. 21 d. none of these



65. In isosceles trapezoid $ABCD$, $\overline{AD} \cong \overline{BC}$. If $m\angle A = x$, then $m\angle c =$ _____?

a. $360 - 3x$ b. $2x$ c. $180 - x$ d. none of these

66. In the figure, the measure of $\angle Y$ is



a. 25° b. 70°

c. 110° d. none of these

67. The diagonals of a square

a. are congruent b. bisect each other c. are perpendicular d. all of these

68. If $2y = 7x$, then the ratio of y to x is

a. $\frac{2}{7}$ b. $\frac{7}{2}$ c. $\frac{x}{y}$ d. none of these

69. If $\frac{4}{5} = \frac{9}{x}$, then x is equal to

a. 7.2 b. 11.25 c. 45 d. none of these

70. How many sides does a regular polygon have if the measure of each interior angle is 150°?

a. 8 b. 12 c. 15 d. none of these

71. Which of these is true about an altitude of a triangle?

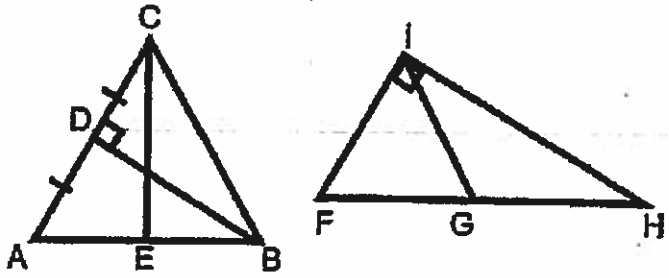
a. It can be in the interior of the triangle.
b. It can be in the exterior of the triangle
c. It can be a side of the triangle
d. All of these are true
e. None of these are true

72. If the measures of two remote interior angles of a triangle are 51° and 46°, then the measure of their corresponding exterior angle is

a. 5° b. 46° c. 51° d. 97° e. none of these

73. Based on the markings shown, which of these is a true statement?

a. $\overline{IG}$ is a median of ΔFHI
b. $\overline{CE}$ is an altitude of ΔABC
c. $\overline{IH}$ is an altitude of ΔFHI
d. none of these
e. all of these

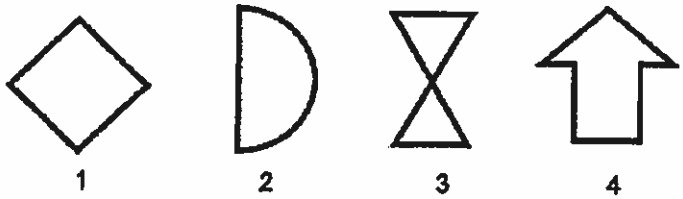


74. Given: Isosceles ΔABC with $\overline{AC} \cong \overline{BC}$, $m\angle A = 5x+6$, *and* $m\angle C = 6x+8$.
Which of the following is true?

a. $m\angle A = 56$ b. $m\angle B = 56$ c. $m\angle C = 68$

d. all of these e. none of these

For #75 – 76, use the figure:



75. Which figure shown is a polygon?

a. 2 b. 3 c. 4 d. all of these e. none of these

76. Which figure shown is convex?

a. 1 b. 2 c. 3 d. 4 e. none of these

77 If ABCD is a parallelogram, which of the following can be proved?

a. $\overline{AC} \perp \overline{BD}$ b. $\overline{AC} \cong \overline{BD}$ c. $\overline{AB} \cong \overline{BC}$ d. all of these e. none of these

78. Given: Trapezoid ABCD with diagonals $\overline{AC}$ and $\overline{BD}$. Which of the following can be proved?

a. $\overline{AC} \cong \overline{BD}$ b. $\overline{AC}$ and $\overline{BD}$ bisect each other c. $\overline{AC} \perp \overline{BD}$

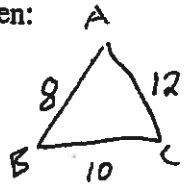
d. all of these e. none of these

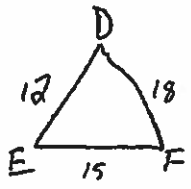
79. If $\Delta ABC \sim \Delta DEF$, AB = 8, BC = 10, CA = 12, and DE = 12, then: (hint-draw a diagram!)

a. EF = 10 b. DF = 15 c. EF = 5

d. $\angle C \cong \angle F$ e. none of these

Corresp. Angles of similar Δs are $\cong$





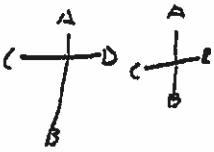
$\frac{AB}{DE} = \frac{8}{12} \Rightarrow \frac{2}{3}$ ... but this isn't needed!

Fill in the blank with sometimes, always, or never to make each statement true.

80. A median of a triangle always bisects the opposite side of the triangle.

81. The complement of an acute angle is never an obtuse angle.

82. If $\overline{AB}$ is the perpendicular bisector of $\overline{CD}$, then $\overline{CD}$ is sometimes the perpendicular bisector of $\overline{AB}$.

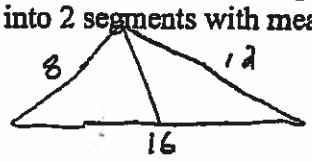


83. Two lines perpendicular to the same plane are never perpendicular to each other.

84. The bisector of an angle of a triangle sometimes bisects the side opposite the angle.

85. If two triangles have all their corresponding angles congruent, then their corresponding sides are sometimes congruent.

86. The angle bisector of the largest angle of a triangle with sides of 8, 12, and 16 divides the opposite side into 2 segments with measures of 32/5 and 48/5. (hint: draw a diagram!)

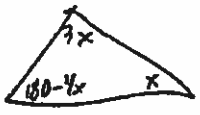


$\frac{8}{x} = \frac{12}{16-x}$

$12x = 128 - 8x \rightarrow 20x = 128 \rightarrow x = \frac{128}{20} = \frac{32}{5}$

$\frac{80}{5} - \frac{32}{5} = \frac{48}{5}$

87. The measure of the largest angle of a triangle is three times the measure of the smallest angle and 30 more than the measure of the third angle. Find the measure of the largest angle. 90°



$180 - 4x + 30 = 3x$

$216 = 7x$

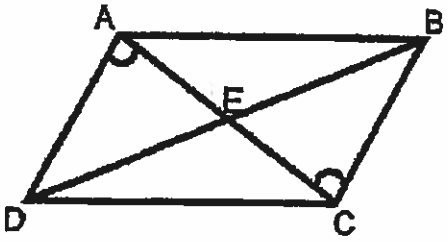
$x = 30$

$3x = 90$

88. State which triangles are similar, and write the postulate or theorem that justifies your answer.

$\Delta AED \sim \Delta CEB$

AA ~ post

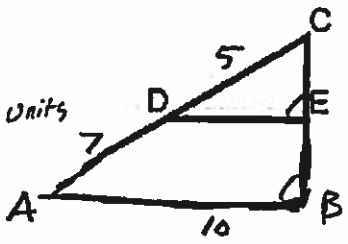


89. Given: $\overline{DE} \parallel \overline{AB}$, DC = 5, DA = 7, and AB = 10. Find DE.

$\triangle CDE \sim \triangle CAB$ ~ratio is $\frac{5}{12}$

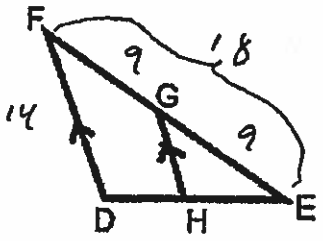
$\frac{DE}{10} = \frac{5}{12}$ $12DE = 50$ $DE = \frac{50}{12} = \frac{25}{6}$

$\frac{25}{6}$ units

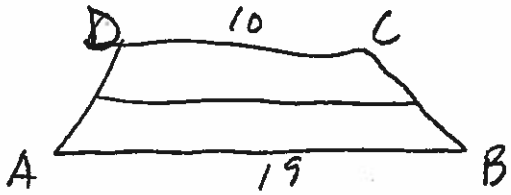


90. Given: ΔDEF with H the midpoint of $\overline{DE}$, FG = 9, FE = 18, and FD = 14. Find GH.

GH = 7

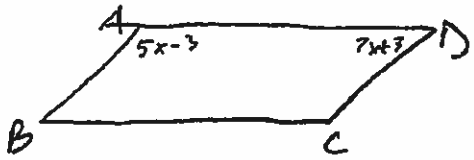


91. Given: Trapezoid ABCD with AB = 19 and DC = 10. Find the length of the median.



$\frac{29}{2}$ units

92. Given: Parallelogram ABCD with $m\angle A = 5x - 3$, $m\angle D = 7x + 3$. Find $m\angle A$.



$5x - 3 + 7x + 3 = 180$

$12x = 180$

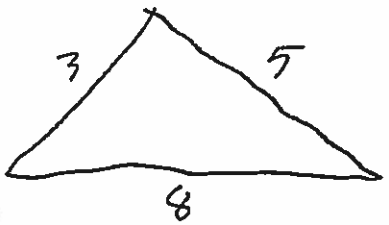
$x = 15$

$m\angle A = 5(15) - 3$

$= 75 - 3$

$= 72°$

93. The perimeter of a triangle is 320 cm and its sides are in the ratio 3:5:8. What are the lengths of the sides of the triangle?



$320 = 3x + 5x + 8x$

$320 = 16x$

$20 = x$

60 cm
100 cm
160 cm