

Math 3301 Foundations of Geometry
Unit I Practice Test

Solutions

1. (a) 21, 25 (b) $1/16, 1/32$ Answers may vary on the explanations.
 2. This argument is invalid (Affirming the conclusion).
 3. 3 minutes 4. 3 socks 5. (a) True (b) False



7. Postulate 1.11: The Substitution Law
 8. (a) Answers may vary. E.g., \overline{AB} (b) \overline{AC}
 9. (a) False (b) False (c) True (d) False (e) True (f) 2
 10. If you want the best for someone, then you love them.
 11. The Beatles were a British band.
 12. If the runner doesn't win the race, then she must not be in excellent cardiovascular shape.
 13. If I drive, then I do not drink.
 14. Acute 15. (a) 42° (b) 138°

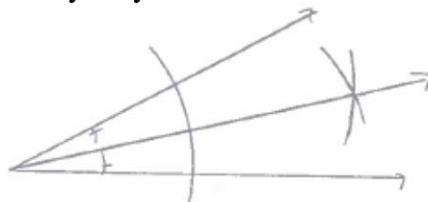
16.

<u>Statements</u>	<u>Reasons</u>
1. $\angle 1$ and $\angle 2$ are complementary	1. <u>Given</u>
2. $m\angle 1 + m\angle 2 = 90^\circ$	2. <u>Def. of comp. \angle's</u>
3. $\angle 1$ & $\angle 3$ are vertical angles	3. <u>Given</u>
4. $m\angle 1 = m\angle 3$	4. <u>Vertical angles are equal in measure.</u>
5. $\angle 2$ & $\angle 4$ are vertical angles	5. <u>Given</u>
6. $m\angle 2 = m\angle 4$	6. <u>Vertical angles are equal in measure.</u>
7. $m\angle 3 + m\angle 4 = 90^\circ$	7. <u>Substitution law</u>
8. $\angle 3$ & $\angle 4$ are complementary	8. <u>Def. of comp. \angle's</u>

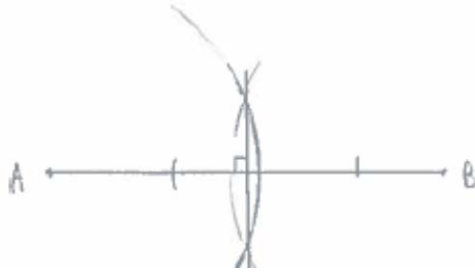
17.

1. $PR = SQ$	1. <u>Given</u>
2. $RS = RS$	2. <u>Reflexive Law</u>
3. $PR + RS = SQ + RS$	3. <u>Addition - Subtraction Law</u>
4. $PS = PR + RS$	4. <u>Segment addition Postulate</u>
5. $RQ = SQ + RS$	5. <u>Segment addition Postulate</u>
6. $PS = RQ$	6. <u>Substitution</u>

18. Answers may vary on the size of the acute angle you bisect.



19. Answers may vary on the length of the segment you bisect.



20. (a) A, B, C (b) $\overline{AB}, \overline{BC}, \overline{AC}$ (c) Scalene (d) Obtuse (e) \overline{AC} (f) $\angle B$
 (g) \overline{BC} (h) $\angle C$

21. (a) True (b) False

22. 1. $\angle C \cong \angle E$
2. $\overline{AC} \cong \overline{AE}$
3. $\angle A \cong \angle A$
4. $\triangle ACF \cong \triangle AEB$

1. Given
2. Given
3. Reflexive law
4. ASA

23. 1. $\overline{AB} \cong \overline{AE}$
2. \overline{AC} bisects $\angle BAD$
3. $\angle EAC \cong \angle BAC$
4. $\overline{AC} \cong \overline{AC}$
5. $\triangle EAC \cong \triangle BAC$

1. Given
2. Given
3. Def. of \angle bisector
4. Reflexive Property
5. SAS

Statements	Reasons
1. $\overline{AD} \cong \overline{CB}$	1. Given
2. $\overline{AB} \cong \overline{CD}$	2. Given
3. $\overline{DB} \cong \overline{DB}$	3. Reflexive
4. $\triangle ADB \cong \triangle CBD$	4. SSS

S	R
1. $\overline{AC} \perp \overline{BD}$	1. Given
2. $\angle 3$ and $\angle 4$ are right angles	2. \perp lines form \cong adj. \angle s
3. $\angle 3 \cong \angle 4$	3. "
4. $\overline{EC} \cong \overline{EC}$	4. Reflexive
5. $\angle 1 \cong \angle 2$	5. Given
6. $\triangle DEC \cong \triangle BEC$	6. ASA
7. $\overline{DC} \cong \overline{BC}$	7. CPCTC
8. $\overline{AC} \cong \overline{AC}$	8. Reflexive
9. $\triangle ABC \cong \triangle ADC$	9. SAS
10. $\overline{AB} \cong \overline{AD}$	10. CPCTC

S	R
1. E is the midpoint of \overline{AC}	1. Given
2. $\overline{AE} \cong \overline{EC}$	2. Def. of midpoint
3. E is the midpoint of \overline{BD}	3. Given
4. $\overline{BE} \cong \overline{ED}$	4. Def. of midpoint
5. $\angle AEB$ and $\angle CED$ are vertical \angle s	5. Def. of vert. \angle s
6. $\angle AEB \cong \angle CED$	6. Vert. \angle s are \cong
7. $\triangle AEB \cong \triangle CED$	7. SAS
8. $\overline{AB} \cong \overline{CD}$	8. CPCTC

S	R
1. $\overline{AB} \cong \overline{CD}$, $\overline{BE} \cong \overline{DE}$	1. Given
2. $\angle AEB \cong \angle CED$	2. Given
3. $\overline{AE} \cong \overline{EC}$	3. Side opp \cong \angle s are \cong
4. $\triangle ABE \cong \triangle CDE$	4. SSS
5. $\angle B \cong \angle D$	5. CPCTC

28.

S	R
1. $\overline{AB} \cong \overline{CB}$, $\overline{AD} \cong \overline{CD}$	1. Given
2. $\overline{OB} \cong \overline{OB}$	2. Reflexive
3. $\triangle AOB \cong \triangle COB$	3. SSS
4. $\angle 1 \cong \angle 2$	4. CPCTC
5. \overline{OC} is bisector of $\angle ABC$	5. def. \angle bisector

29.

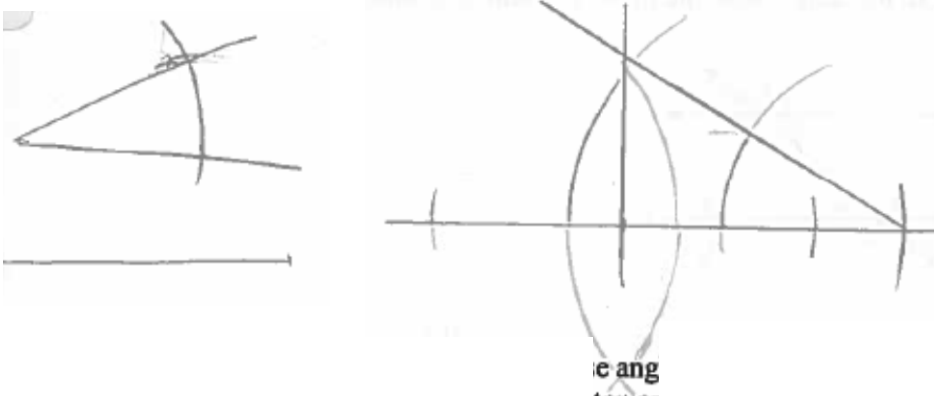
- (a) False (b) True (c) False

30.

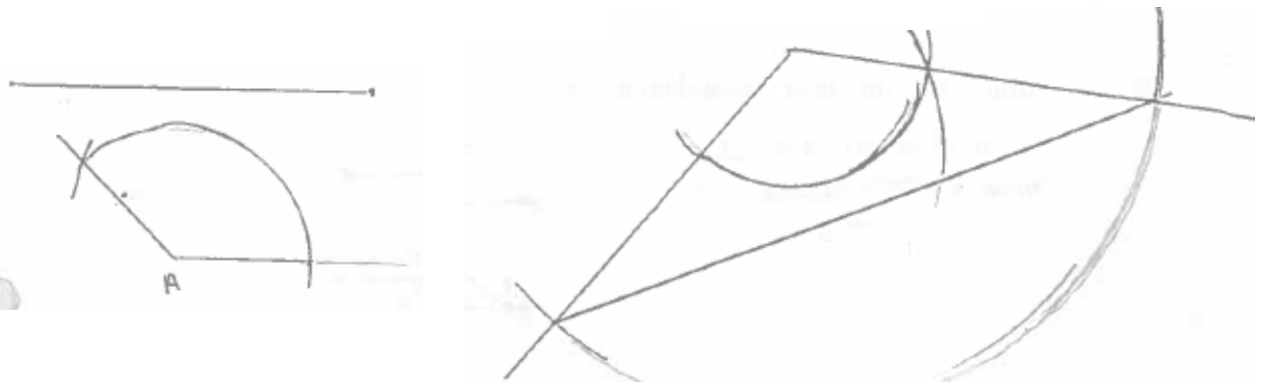
S	R
1. $\triangle WYX \cong \triangle ZYX$ + $\overline{WX} \cong \overline{YZ}$	1. Given
2. $\angle W \cong \angle Z$	2. \angle s opp \cong sides are \cong
3. $\overline{WY} \perp \overline{XZ}$	3. Given
4. $\angle 1$ + $\angle 2$ are rt angles	4. \perp lines form rt \angle s
5. $\overline{XZ} \cong \overline{XZ}$	5. Reflexive
6. $\triangle WXZ \cong \triangle YXZ$ are rt \triangle s	6. Def of \triangle s
7. $\triangle WXZ \cong \triangle YXZ$	7. LA

(could also use AAS)

31.



32.



33. Yes (assuming the lines are all coplanar).

34. Answers may vary. E.g., (a) $\angle 1$ & $\angle 5$ (b) $\angle 1$ & $\angle 6$

35. (a) 45° (b) 110°

36. (a) Yes (b) No (c) Answers may vary. E.g., $\angle 2$

37.

Statement	Reason
1. $\angle 1 \cong \angle 2$	1. Given
2. $\angle 1 \cong \angle 2$	2. Given
3. $\angle 1 \cong \angle 3$	3. Alt Int. Angs \cong
4. $\angle 2 \cong \angle 4$	4. "
5. $\angle 3 \cong \angle 4$	5. Substitution / Transitive Props
6. $\overline{AB} \cong \overline{AC}$	6. Sides opp \cong Angs are \cong
7. $\triangle ABC$ is isosceles	7. defn. Isosceles \triangle

38. Yes. Answers may vary on the explanation.

39. 33°

40. (a) 50° (b) 75° (c) 25°

41. True

42. (a) 131° (b) 121°

43. 49°

44. $37.2^\circ, 68.4^\circ, 74.4^\circ$

45. Heptagon

46. 120°

47. 360°

48. 22 sides

49. (a) 9 sides (b) 6 sides

50. (a) 540° (b) 360°

51. $m\angle 1 = 60^\circ, m\angle 1 = 120^\circ, m\angle 3 = 120^\circ$

52. (a) $\angle B \cong \angle D$ (b) $\overline{AB} \cong \overline{DC}$