5.5 Inequalities in Triangles- Notes Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Learning Targets** | **Help!** | **I’m getting there…** | **I’m almost there…** | **Yes! I totally got this! ☺** |
| 1. I can apply the triangle inequality theorem. |  |  |  |  |



*\*\*Side lengths of a triangle theorem: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*



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Example A:

1) In ΔRGY, RG = 14, GY = 12, RY = 20. 2) In ΔXYZ, m∠X = 40°, m∠Z = 60°. List the sides

List the angles from largest to smallest. in order from shortest to longest.



3) Which side is the shortest? 4) In ΔABC, ∠C is right. Name the longest side.

58°

62°

U

V

T



*\*\*Triangle Inequality Theorem:* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



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Example B: Can a triangle be formed with the given side lengths?

1) 3, 7, 8 2) 3, 6, 10



Example C: Find the possible side lengths of the third side of a triangle with the given side lengths.

1) 8 cm, 10 cm 2) 3 in, 12 in



Example D: Explain why each triangle below is impossible.

18

32

12

1) 2)



30°

15

12

25

100°

50°

**WHITEBOARDS:**

Example A:

1) In ΔRGY, RG = 24, GY = 18, RY = 21. 2) In ΔXYZ, m∠X = 54°, m∠Z = 20°.

List the angles from smallest to largest. List the sides from shortest to longest.

Example B: Can a triangle be formed with the given side lengths? Why or why not?

1) 5, 8, 10 2) 4, 4, 14 3) 4, 4, 5 4) 7, 7, 7

Example C: Find the possible side lengths of the third side of a triangle with the given side lengths.

1) 5 cm, 5 cm 2) 8 cm, 22 cm