Name: _____ Date: _____

Fresh Math

AA Similarity - Medium

Use the angle measures to decide whether the triangles are similar. Explain.

1. Triangle ABC: 35° and 120°. Triangle DEF: 35° and 25°.
2. Triangle ABC: 65° and 75°. Triangle DEF: 65° and 40°.
3. Triangle ABC: 100° and 35°. Triangle DEF: 100° and 45°.
4. Triangle ABC: 65° and 70°. Triangle DEF: 65° and 35°.
5. Triangle ABC: 85° and 30°. Triangle DEF: 65° and 85°.
6. Triangle ABC: 65° and 30°. Triangle DEF: 30° and 65°.

The triangles are similar. Find the missing side lengths.

7. Triangle ABC is similar to triangle DEF. AB = 5, BC = 6, AC = 8, and DF = 32.
8. Triangle ABC is similar to triangle DEF. AB = 8, BC = 14, AC = 18, and DE = 16.
9. Triangle ABC is similar to triangle DEF. AB = 12, BC = 21, AC = 27, and EF = 84.
10. Triangle ABC is similar to triangle DEF. AB = 5, BC = 6, AC = 8, and DF = 16.

Name: _____ Date: _____

AA Similarity - Medium

The triangles are similar. Find the missing side lengths.

11. Triangle ABC is similar to triangle DEF. AB = 10, BC = 18, AC = 22, and DE = 20.

12. Triangle ABC is similar to triangle DEF. AB = 9, BC = 12, AC = 15, and EF = 36.

The triangles formed are similar by AA. Find each unknown height.

13. A 5-ft student casts a 3-ft shadow. At the same time, a light pole casts a 24-ft shadow. How tall is the light pole?

14. A 5-ft student casts a 3-ft shadow. At the same time, a building casts a 12-ft shadow. How tall is the building?

15. A 3-ft stick casts a 1-ft shadow. At the same time, a building casts a 4-ft shadow. How tall is the building?

16. A 2-ft stick casts a 5-ft shadow. At the same time, a tree casts a 45-ft shadow. How tall is the tree?

17. A 2-ft stick casts a 5-ft shadow. At the same time, a light pole casts a 50-ft shadow. How tall is the light pole?

18. A 6-ft person casts a 2-ft shadow. At the same time, a light pole casts a 20-ft shadow. How tall is the light pole?

19. A 4-ft stick casts a 5-ft shadow. At the same time, a tree casts a 25-ft shadow. How tall is the tree?

20. A 4-ft stick casts a 2-ft shadow. At the same time, a tree casts an 18-ft shadow. How tall is the tree?

AA Similarity - Medium - Answer Key

1. Triangle ABC: 35° and 120°. Triangle DEF: 35° and 25°.

   Yes: the third angles are 25° and 120°, so both triangles have angles 35°, 25°, 120° (AA)

2. Triangle ABC: 65° and 75°. Triangle DEF: 65° and 40°.

   Yes: the third angles are 40° and 75°, so both triangles have angles 65°, 40°, 75° (AA)

3. Triangle ABC: 100° and 35°. Triangle DEF: 100° and 45°.

   Yes: the third angles are 45° and 35°, so both triangles have angles 35°, 45°, 100° (AA)

4. Triangle ABC: 65° and 70°. Triangle DEF: 65° and 35°.

   No: the angles are 65°, 70°, 45° and 65°, 35°, 80°, so only one pair of angles matches

5. Triangle ABC: 85° and 30°. Triangle DEF: 65° and 85°.

   Yes: the third angles are 65° and 30°, so both triangles have angles 65°, 30°, 85° (AA)

6. Triangle ABC: 65° and 30°. Triangle DEF: 30° and 65°.

   Yes: the third angles are 85° and 85°, so both triangles have angles 30°, 65°, 85° (AA)

7. Triangle ABC is similar to triangle DEF. AB = 5, BC = 6, AC = 8, and DF = 32.

   DE = 20, EF = 24 (scale factor 4)

8. Triangle ABC is similar to triangle DEF. AB = 8, BC = 14, AC = 18, and DE = 16.

   EF = 28, DF = 36 (scale factor 2)

9. Triangle ABC is similar to triangle DEF. AB = 12, BC = 21, AC = 27, and EF = 84.

   DE = 48, DF = 108 (scale factor 4)

10. Triangle ABC is similar to triangle DEF. AB = 5, BC = 6, AC = 8, and DF = 16.

    DE = 10, EF = 12 (scale factor 2)

AA Similarity - Medium - Answer Key

11. Triangle ABC is similar to triangle DEF. AB = 10, BC = 18, AC = 22, and DE = 20.

    EF = 36, DF = 44 (scale factor 2)

12. Triangle ABC is similar to triangle DEF. AB = 9, BC = 12, AC = 15, and EF = 36.

    DE = 27, DF = 45 (scale factor 3)

13. A 5-ft student casts a 3-ft shadow. At the same time, a light pole casts a 24-ft shadow. How tall is the light pole?

    40 ft

14. A 5-ft student casts a 3-ft shadow. At the same time, a building casts a 12-ft shadow. How tall is the building?

    20 ft

15. A 3-ft stick casts a 1-ft shadow. At the same time, a building casts a 4-ft shadow. How tall is the building?

    12 ft

16. A 2-ft stick casts a 5-ft shadow. At the same time, a tree casts a 45-ft shadow. How tall is the tree?

    18 ft

17. A 2-ft stick casts a 5-ft shadow. At the same time, a light pole casts a 50-ft shadow. How tall is the light pole?

    20 ft

18. A 6-ft person casts a 2-ft shadow. At the same time, a light pole casts a 20-ft shadow. How tall is the light pole?

    60 ft

19. A 4-ft stick casts a 5-ft shadow. At the same time, a tree casts a 25-ft shadow. How tall is the tree?

    20 ft

20. A 4-ft stick casts a 2-ft shadow. At the same time, a tree casts an 18-ft shadow. How tall is the tree?

    36 ft