**Section 6.2 – \*\*Relationship between slope and angle of elevation February 26, 2020**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Section 6.2**

1. **(a) *FIRST*** determine the ***slope (rise/run) in lowest terms*** for each triangle below.

**(b) *SECOND*** ***determine the tangent ratio of angle A*** (2nd TAN) to the nearest degree for each triangle below**.**

1. **c.**

25 cm

6 in

**A**

12 in

**A**

15 cm

 **Slope = rise = \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_ Slope = rise = \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_**

 **Run run**

**Slope as decimal = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Slope as a decimal = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Angle A (in degrees) = \_\_\_\_\_\_\_\_\_\_\_ Angle A (in degrees) = \_\_\_\_\_\_\_\_\_\_\_**

50 m

1. **d.**

**A**

5 m

30 m

**A**

15 m

 **Slope = rise = \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_ Slope = rise = \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_**

 **Run run**

**Slope as decimal = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Slope as a decimal = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Angle A (in degrees) = \_\_\_\_\_\_\_\_\_\_\_ Angle A (in degrees) = \_\_\_\_\_\_\_\_\_\_\_**

1. Determine the ***slope (reduced fraction)*** of each line. REMEMBER – use any two points on the line!
2. **c.**

 ****

**Slope = \_\_\_\_\_ = \_\_\_\_\_ Slope = \_\_\_\_\_ = \_\_\_\_\_**

1. **d.**

 ****

**Slope = \_\_\_\_\_ = \_\_\_\_\_ Slope = \_\_\_\_\_ = \_\_\_\_\_**

1. Determine the **tangent ratio** (in degrees) of each line in question #2 above.
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ d.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
4. The bottom of a ladder is 1.5 m from a house. The angle between the ladder and the ground is 60 degrees. How far up the house does the ladder reach? Round your answer to the nearest tenth of a meter. First, draw a diagram & include labels then solve for the unknown (X) below.

**TAN 60 degrees = \_\_\_X\_\_\_**

 **1.5 m**

X

600

1.5 m

1. From a boat 120m away, the angle of elevation of the top of a lighthouse is 42 degrees. Determine the height of the top of the lighthouse from sea level. Express your answer to the nearest tenth of a meter. First, draw a diagram with labels and then solve for the unknown (X).

**TAN 42 degrees = \_ X\_\_\_**

 **120 m**

X

420

boat

120 m

1. Determine the angle of elevation in degrees of a road with each grade (provided as a percentage below).

Example: 15% = 15 divided by 100 = .15

 Shift or 2nd TAN .15 = 8.53 degrees = 9 degrees

1. 6%

6% = 6 divided by 100 = \_\_\_\_\_\_\_

 Shift/2nd Tan (answer above) \_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_ degrees

1. 25%

25% = 25 divided by 100 = \_\_\_\_\_\_\_

Shift/2nd Tan (answer above) \_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_ degrees

1. Indicate the relationship between the grade of a road and the angle of elevation. Provide an example.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the grade of a road, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the angle of elevation.

 Example:

1. In class, we identified items in a house that would have a zero slope and undefined slopes. What is the importance of both of these slopes to real life situations? Provide two examples.

Items with zero slope in a house: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Importance of items with zero slope: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Items with undefined slope in a house: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Importance of items with undefined slope: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Carpenters must follow guidelines when building stairs. The rule is that for every 250 mm of run there should be 200 mm rise. Chad is building a set of stairs. Each tread will have a run of 10 inches and a rise of 8 inches. Will his stairs meet the requirements? Explain

Slope = rise divided by run

 Slope =

1. Describe a road with a 0 % grade. State some effects this would have on driving.

NOTE: Compared to a downward or upward slope of road.

 The effects of a zero percent grade on a road would include:

 (1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**END OF SECTION 6.2**