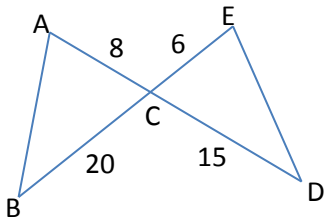
Haddis Alemayehu Special Boarding School

Grade 9 Mathematics

Work Sheet on Similarity and Trigonometry

1. Show that the ratio of the perimeters of two similar triangles is the ratio of their corresponding sides.
2. Show that the ratio of the areas of two similar triangles is the ratio of the squares of their corresponding sides.
3. How can you find the height of a tree or a pole without measuring it? (
4. Let ABCDE & FGHIJ be pentagons with ABCDE~FGHIJ. If AB = 8cm, FG = 12cm and area of ABCDE be $1024cm^2$, then find the area of FGHIJ.
5. Given in the figure below, is $\Delta ACB \sim \Delta DCE$?



6. Let $\Delta ABC \sim \Delta DEF$. If AB=4cm, BC= (x+1)cm, DE= (2x-3)cm, EF= 3cm and $<B \cong <E$, then what is the value of x?
7. If the line from the top of a 30m building to the ground just passes over the top of a pole 15m away from the building, then what is the height of the pole?
8. Let the areas of two similar polygons be $256cm^2$ and $81cm^2$, then find the ratio of the corresponding sides of the smaller polygon to the larger.
9. Let $\Delta ABC \sim \Delta DEF$. If AB=6cm and DE= 8cm, then find the ratio of the perimeters of ΔABC to ΔDEF.
10. Convert each of the following into radians.

    a. 30^0 b. 45^0 c. 60^0 d. 120^0

11. Convert each of the following into degree.

    a. $\frac{\pi}{3}$rad b. $\frac{3\pi}{4}$rad c. $\frac{\pi}{5}$rad d. $\frac{3\pi}{2}$rad

12. In ΔABC; if m(<A) =60^0, AC = 6cm and m(<B) =30^0, then find AB and BC.
13. Find the relationship between the trigonometric values of an acute angle θ with its supplement α.
14. Find the relationship between the trigonometric values of an angle θ with its complement α.
15. A ladder leans against a building. If the angle between the tops of the ladder and the building is 75^0 and the height of the building is 20m, then find the length of the ladder and the distance between the foot of the ladder and the building.

Set by: Awoke Zegeye