

Grade 9 Math
Test 4
Congruence and Similarity
Outcomes: D5, E1, E2, E3, E4, E5

Name: _____

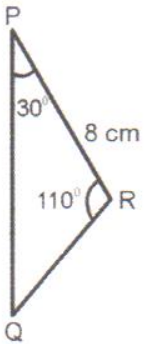
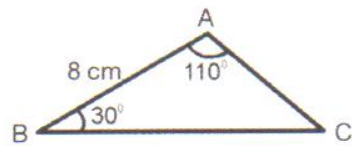
Multiple Choice. Circle the correct response.

1. If $\triangle ABC \cong \triangle DEF$, which angle would $\angle CAB$ be equal to?

- (A) $\angle DEF$
- (B) $\angle FDE$
- (C) $\angle EFD$
- (D) $\angle DFE$

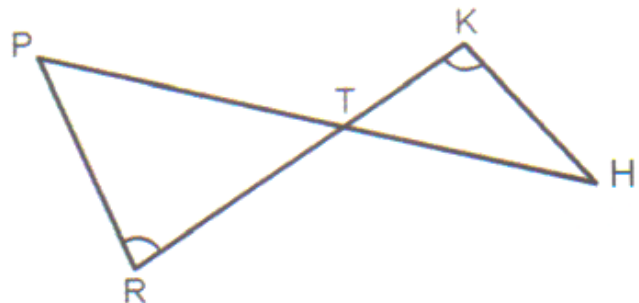
2. Which condition could be used to show that the triangles shown are congruent?

- (A) AAA
- (B) ASA
- (C) SAS
- (D) SSS



3. Given the diagram, which statement must be correct?

- (A) $\frac{PR}{KH} = \frac{PT}{KT}$
- (B) $\frac{RT}{HT} = \frac{PT}{KH}$
- (C) $\frac{PT}{HT} = \frac{RT}{KT}$
- (D) $\frac{PR}{KH} = \frac{TH}{TR}$

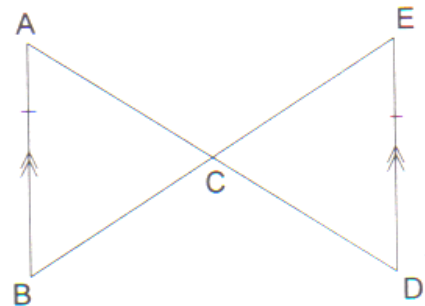


4. Two triangles are similar and congruent. What are the ratios of their corresponding sides?

- (A) 1 : 1
- (B) 1 : 2
- (C) 2 : 1
- (D) 1 : 3

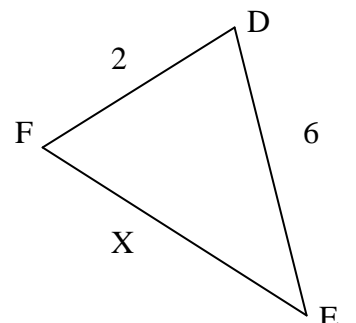
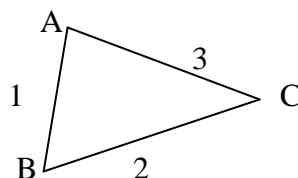
5. By which congruence relation is $\triangle ABC \cong \triangle DEC$?

- (A) ASA
- (B) SSA
- (C) SAS
- (D) SSS



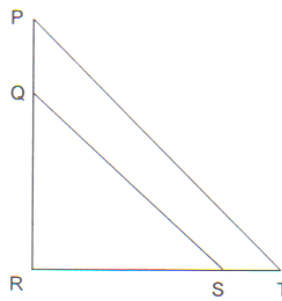
6. If $\triangle ABC \sim \triangle DFE$, what is the value of x?

- (A) 12
- (B) $\frac{1}{2}$
- (C) 3
- (D) 4



7. Given $\triangle PRT \sim \triangle QRS$ as shown, which statement is true?

- (A) $\frac{PQ}{QR} = \frac{ST}{RS}$
 (B) $\angle QRS = \angle SQR$
 (C) $\frac{PR}{QR} = \frac{TR}{SR}$
 (D) $\angle TPQ = \angle QST$

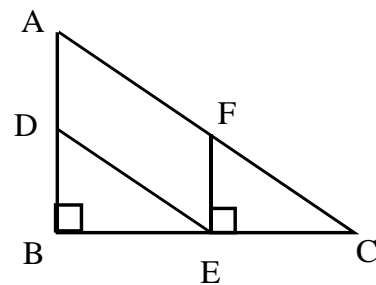


8. A flagpole's shadow is 15.5 m long at the same time John's shadow is 3.6 m long. If John is 1.8 m tall, what is the height of the flagpole to the nearest tenth of a meter?

- (A) 0.4
 (B) 6.1
 (C) 7.8
 (D) 31.0

9. Which triangle is similar to $\triangle ABC$?

- (A) $\triangle BDE$
 (B) $\triangle CEF$
 (C) $\triangle DEB$
 (D) $\triangle FEC$

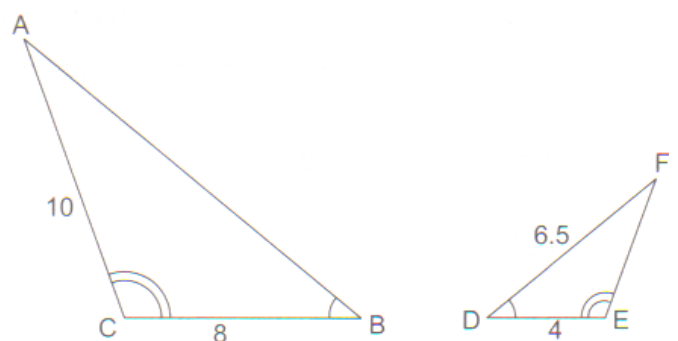


10. Two triangles are similar. The smallest triangle is 1 cm while the smallest side in the other is 8 cm. The largest angle in the first triangle is 60° . What is the measure of the largest angle in the second triangle?

- (A) 8°
 (B) 7.5°
 (C) 60°
 (D) 480°

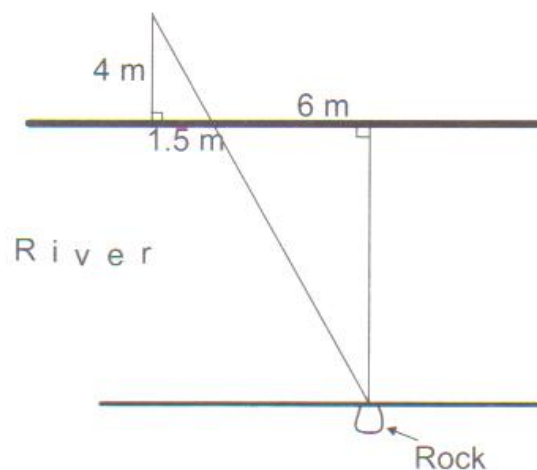
11. Given the diagram as shown, determine the length of \overline{AB} .

- (A) 3.25
 (B) 10.5
 (C) 13
 (D) 20

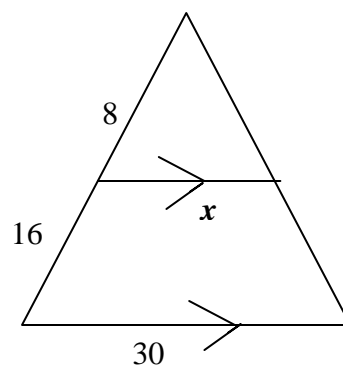


12. Chris sights a rock across a river and walks along one of the river banks making the measurements shown in the diagram. How many meters wide is the river?

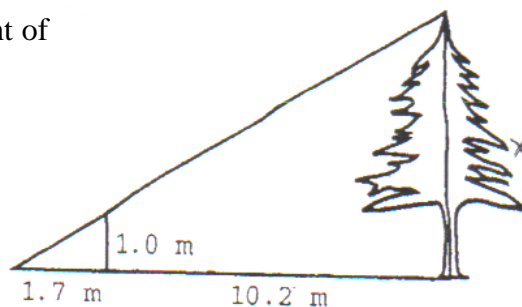
- (A) 1
 (B) 2.25
 (C) 16
 (D) 30



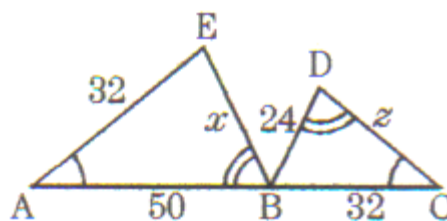
13. Using the diagram, determine the value of x .
- (A) 10
 (B) 15
 (C) 60
 (D) 90



14. To the nearest tenth of a meter, what is the height of the tree?
- (A) 0.17
 (B) 6.0
 (C) 6.9
 (D) 7.0



15. Find the value of z .
- (A) 37.5
 (B) 42.3
 (C) 50
 (D) 75



Constructed Response. Answer all questions and show all workings. Full marks will not be given for incomplete solutions.

1.

A 1.85 m tall person has a shadow which is 4.62 m long at the same time that a tree has a shadow which is 18.4 m long. Using similar triangles, with the triangles labeled, how tall is the tree?
Draw a diagram. State which triangles are similar and the ratios that are equal.

Find the missing values.

3A 10 ft ladder touches the side of a building at a point of 8 ft above the ground. At what height would a 28 ft ladder touch the building if it makes the same angle with the ground?

