Congruent triangles: choosing the rule and real structures worksheet – Grade 9

Grade 9 · Mixed level · 20 questions · **Version X9491**

Name: _____ Date: _____ Score: ___ / 20

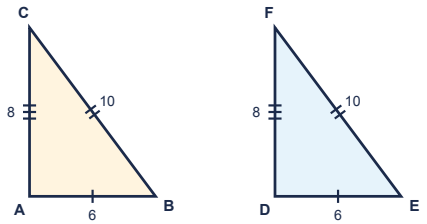
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1. Which of these does NOT prove two triangles are congruent?

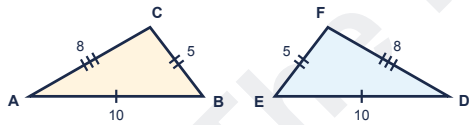
   A. AAA **B.** SSS **C.** SAS **D.** ASA

2. The triangles are congruent. Which statement is correct?



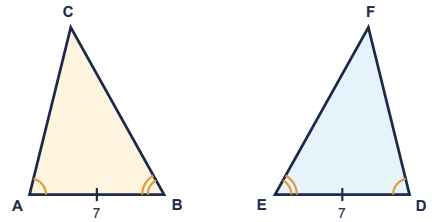
   A. △ABC ≅ △DEF **B.** △ABC ≅ △FED **C.** △ABC ≅ △EDF

3. Which rule shows these triangles are congruent?



   A. SSS **B.** SAS **C.** ASA **D.** AAS

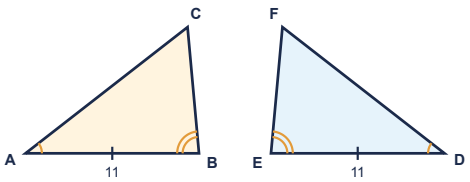
4. The triangles are congruent. Which statement is correct?



   A. △ABC ≅ △EDF **B.** △ABC ≅ △DEF **C.** △ABC ≅ △FED

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5. Which rule shows these triangles are congruent?



A. SSS **B.** SAS **C.** ASA **D.** AAS

6. Which of these does NOT prove two triangles are congruent?

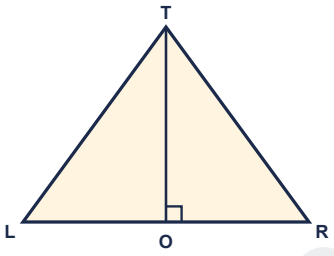
A. SSA **B.** SAS **C.** RHS **D.** AAS

7. The triangles are congruent. Which statement is correct?



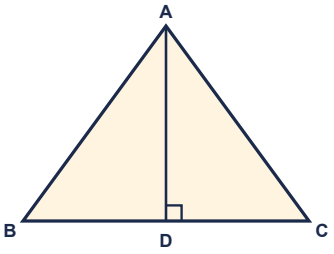
A. △ABC ≅ △EDF **B.** △ABC ≅ △FED **C.** △ABC ≅ △DEF

8. Two guy wires of 13 m run from the top of a 12 m pole to the ground. How far apart are the anchors, in metres, if they are on opposite sides?



Answer: _____ m

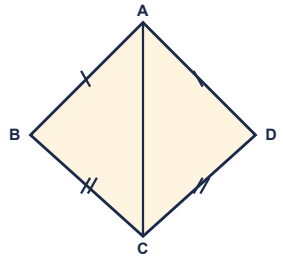
9. A roof truss has rafters AB = AC and a vertical post AD from the peak to the midpoint D of BC. Which rule shows △ABD ≅ △ACD?



A. SSS **B.** AAA **C.** SSA **D.** None

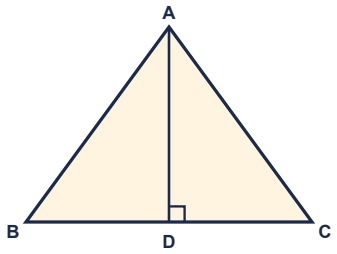
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10. A kite frame has AB = AD and CB = CD. ∠BAC = 48°. What is ∠BAD, in degrees?



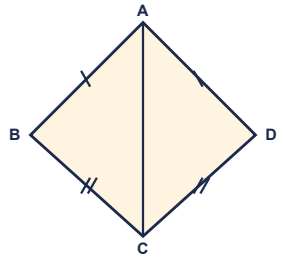
Answer: _____ °

11. A roof truss has equal rafters of 5 m and a post of 4 m from the peak to the midpoint of the beam. How long is the whole beam, in metres?



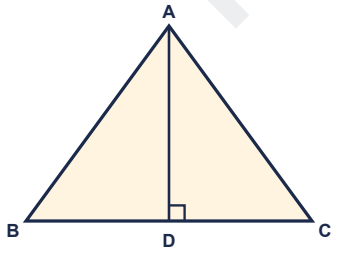
Answer: _____ m

12. A kite frame has AB = AD and CB = CD. ∠BAC = 38°. What is ∠BAD, in degrees?



Answer: _____ °

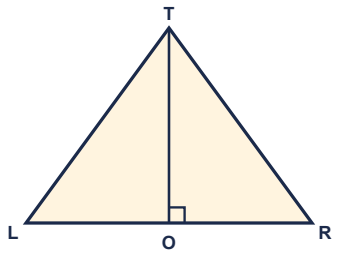
13. A roof truss has equal rafters of 17 m and a post of 15 m from the peak to the midpoint of the beam. How long is the whole beam, in metres?



Answer: _____ m

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14. Two guy wires of 10 m run from the top of an 8 m pole to the ground. How far apart are the anchors, in metres, if they are on opposite sides?



Answer: _____ m

15. In a parallelogram ABCD with diagonal AC, what proves △ABC ≅ △CDA?

A. ASA, using alternate angles and the shared side **B.** SSA **C.** AAA

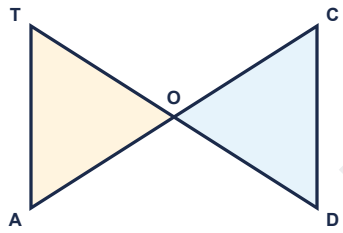
D. They are not congruent

16. Why are triangles used in bridges and roof trusses?

A. Three fixed sides fix the shape (SSS) **B.** They use less steel than any shape

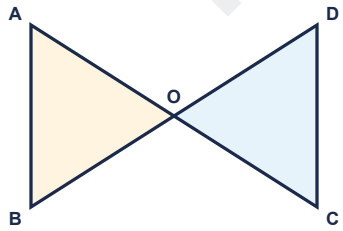
C. They are always right-angled **D.** They look nice

17. To measure a river's width, Mateo walks 92 m along the bank from A (opposite a tree T) to O, then 92 m further to C, then away from the river until O and T line up, at D. CD is 20 m. How wide is the river, in metres?



Answer: _____ m

18. Two crossing beams bisect each other at O. What must be true of the beams' end points?

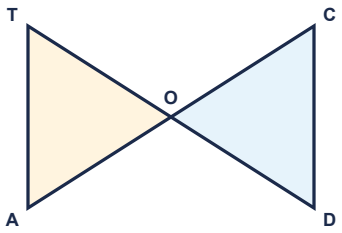


A. They form a parallelogram **B.** They form a triangle **C.** They are all on one line

D. Nothing

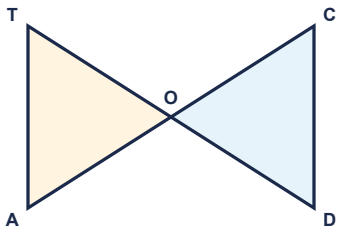
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19. To measure a river's width, Zara walks 120 m along the bank from A (opposite a tree T) to O, then 120 m further to C, then away from the river until O and T line up, at D. CD is 16 m. How wide is the river, in metres?



Answer: _____ m

20. To measure a river's width, Ethan walks 60 m along the bank from A (opposite a tree T) to O, then 60 m further to C, then away from the river until O and T line up, at D. CD is 32 m. How wide is the river, in metres?



Answer: _____ m

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Answer key · Version X9491

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1. **A (AAA)**
2. **A (△ABC ≅ △DEF)**
3. **A (SSS)**
4. **B (△ABC ≅ △DEF)**
5. **C (ASA)**
6. **A (SSA)**
7. **C (△ABC ≅ △DEF)**
8. **10**
9. **A (SSS)**
10. **96**
11. **6**
12. **76**
13. **16**
14. **12**
15. **A (ASA, using alternate angles and the shared side)**
16. **A (Three fixed sides fix the shape (SSS))**
17. **20**
18. **A (They form a parallelogram)**
19. **16**
20. **32**

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