Coordinate geometry and transformations Worksheet

Geometry and Trigonometry

Name _____ Date _____

Warm-up

1. What's the distance from $(0, 0)$ to $(3k, 4k)$ if $k = 1$?

2. Which does not prove congruence?
   (A) ASA (B) SSS (C) SAS (D) AAA

3. Two angles of a triangle are $61°$ and $50°$. What's the third, in degrees?

4. Find the midpoint of $(-5, 5)$ and $(7, 7)$.
   x _____ y _____

5. Two sides and the angle between them match. Which rule applies?
   (A) ASA (B) AAA (C) SSS (D) SAS

Practice

6. Find the distance from $(5, -5)$ to $(20, 31)$.

7. A square of side 7 is dilated by a factor of 4. What's the new side?

8. Two right triangles have equal hypotenuses and one equal leg. Which rule applies?
   (A) HL (B) AAA (C) SSA (D) None

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9. $A = 30°$, $B = 90°$, $a = 9$. Find b.

10. Find the distance from $(-2, 3)$ to $(4, 11)$.

11. $\triangle ABC \cong \triangle DEF$. If $AB = 22$, find DE.

12. Sides 11 and 7 meet at 90°. If the third side is c, find c^2.

13. $\triangle ABC \cong \triangle DEF$. Angle $A = 47°$ and angle $B = 43°$. Find angle F in degrees.

Challenge

14. $M(-5, -5)$ is the midpoint of $A(-12, -6)$ and $B(x, y)$. Find x.

15. A square of area 25 is dilated by a factor of 4. What's the new area?

16. $\triangle PQR \cong \triangle STU$, $PQ = 9x$ and $ST = x + 48$. Find x.

17. Sides of 7 and 8 meet at 120°. Find the third side.

18. Which triangle is a right triangle? Vertices $(0, 0)$, $(6, 0)$ and:
    (A) $(-1, 3)$ (B) $(0, 3)$ (C) $(7, 3)$ (D) $(1, 3)$

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Coordinate geometry and transformations Worksheet: Answer Key

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1. 5

   Legs 3 and 4. It's a 3-4-5 triangle scaled up.

2. (D) AAA

   Equal angles can come in different sizes.

3. 69

   Angles add to 180°.

4. x 1, y 6

   Average each coordinate.

5. (D) SAS

   The angle sits between the sides.

6. 39

   Legs 15 and 36.

7. 28

   Multiply lengths by 4.

8. (A) HL

   That's exactly the HL rule.

9. 18

   $\frac{9}{1/2} = \frac{b}{1}$.

10. 10

    Legs 6 and 8.

11. 22

    Corresponding sides are equal, and order matters.

12. 170

    $\cos 90° = 0$, so it's Pythagoras.

13. 90

    F matches C, and angles add to 180°.

14. 2

    From A to M is 7 across. Go the same again.

15. 400

    Area scales by k^2, which is 16.

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16. 6

    Set them equal and solve.

17. 13

    $\cos 120° = -\frac{1}{2}$, so $c^2 = 49 + 64 + 56 = 169$.

18. (B) $(0, 3)$

    The sides along the axes meet at a right angle.

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