## Similar Triangles and Polygons Test V2

Multiple Choice
Identify the choice that best completes the statement or answers the question.

_____ 1. Determine the scale factor for this scale diagram.
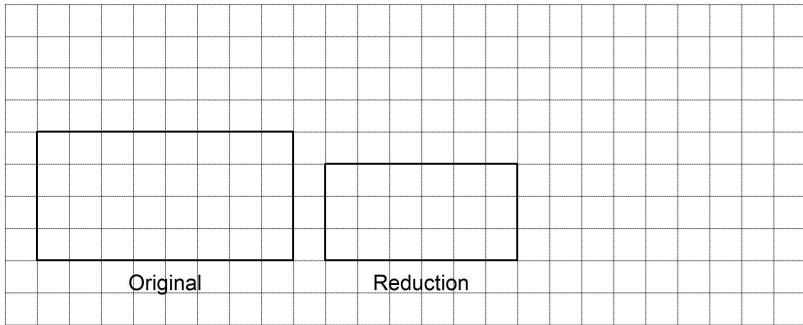

a.   8 b. $\dfrac{1}{4}$ c.   32 d.   4

_____ 2. A rectangle has length 8 cm and width 6 cm.
The rectangle is to be enlarged by a scale factor of 5.
Calculate the length of the enlargement.
a.   30 cm b.   70 cm c.   40 cm d.   13 cm

_____ 3. A circle has diameter 36 cm. The diameter of the reduction is 9 cm.
Determine the scale factor.

a.   4 b. $\dfrac{1}{27}$ c.   27 d. $\dfrac{1}{4}$

_____ 4. Determine the scale factor for this reduction.

a.   2 b. $\dfrac{1}{2}$ c. $\dfrac{1}{4}$ d.   4

_____ 5. Determine the scale factor for this reduction.

    a. $\dfrac{4}{3}$ b. $\dfrac{1}{2}$ c. $\dfrac{2}{3}$ d. $\dfrac{3}{4}$

_____ 6. A model ship is built to a scale of 1:600.
If the actual length of the ship is 45 m, determine the length of the model.
Give your answer to the nearest tenth of a centimetre, if necessary.
    a. 55.5 cm   b. 0.08 cm   c. 7.5 cm   d. 13.3 cm
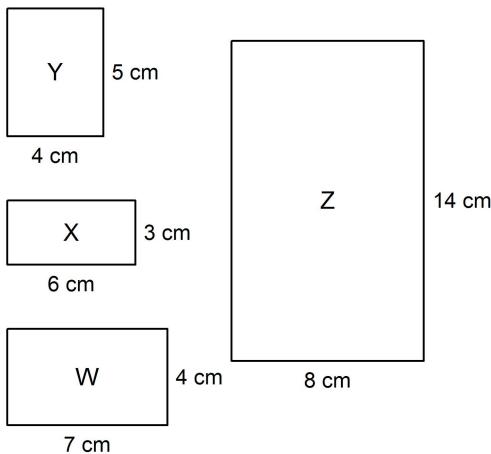
_____ 7. Calculate the side length, in units, in this proportion: $\dfrac{PQ}{4} = \dfrac{5}{80}$
   a. 0.25   b. 4   c. 0.11   d. 0.83
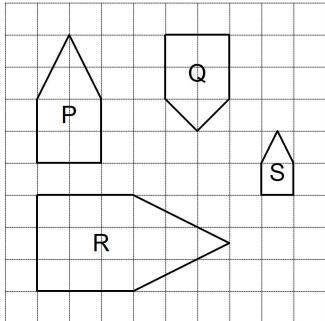
_____ 8. Identify similar rectangles.
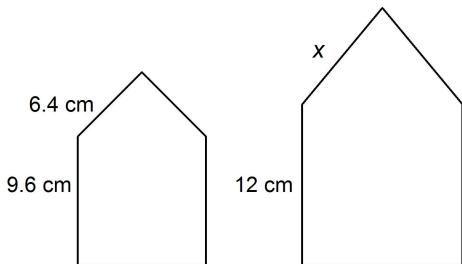
    a. Y and W   b. W and Z   c. Y and Z   d. X and Z

_____ 9. Identify similar pentagons.
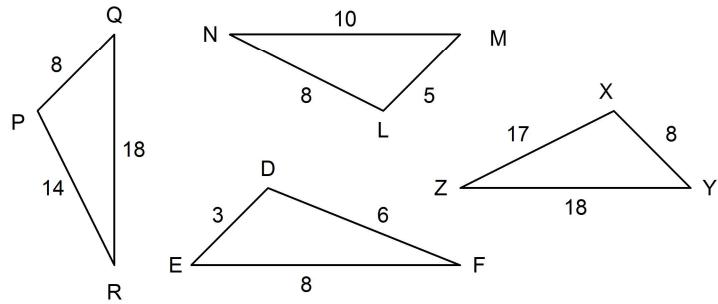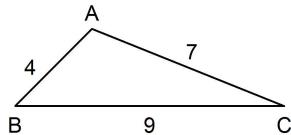
   a.   Q, R, and S   b.   P, R, and S   c.   Q and S   d.   P, Q, and S

_____ 10. These two pentagons are similar. Determine the value of x.

     a.   8 cm   b.   1.9 cm   c.   5.12 cm   d.   18 cm

_____ 11. Which triangle is similar to $\triangle$ABC?
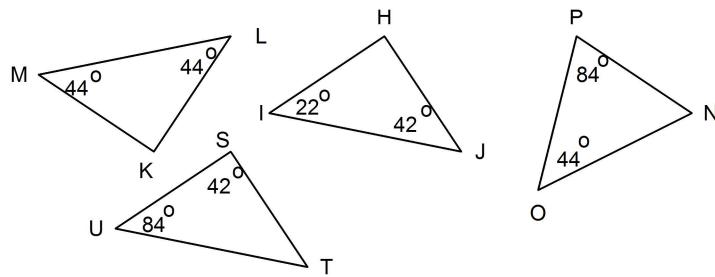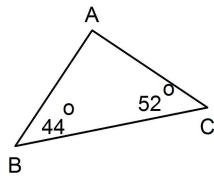
     a. $\triangle$XYZ   b. $\triangle$DEF   c. $\triangle$PQR   d. $\triangle$LMN
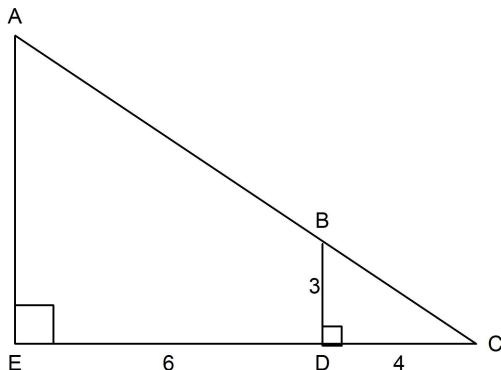
_____ 12. Which triangle is similar to ΔABC?

a. ΔHIJ   b. ΔKLM   c. ΔPON   d. ΔSTU
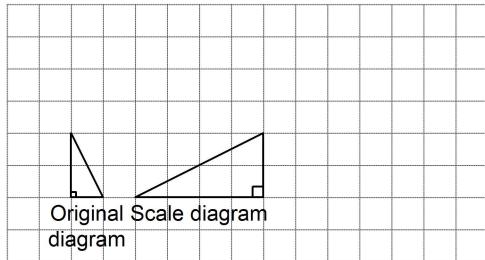
_____ 13. Determine the length of AE in this pair of similar triangles.
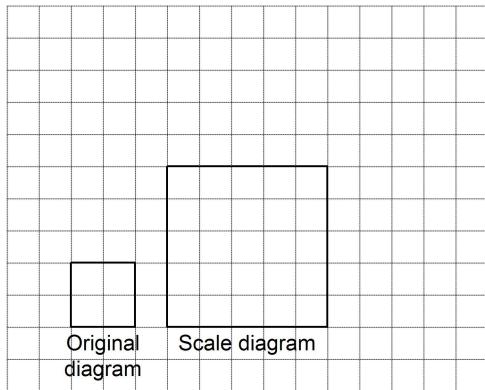
a. 7.5   b. 4.5   c. 3.3   d. 2.3

Short Answer
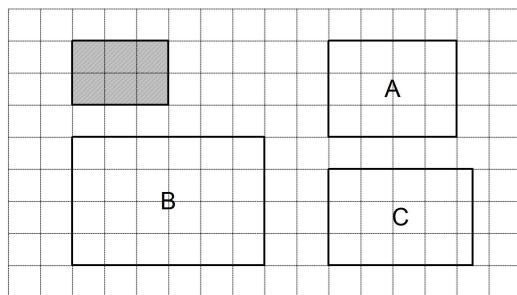
14. Determine the scale factor for this scale drawing.

Original Scale diagram
diagram

15. Determine the scale factor for this scale drawing.

Original   Scale diagram
diagram
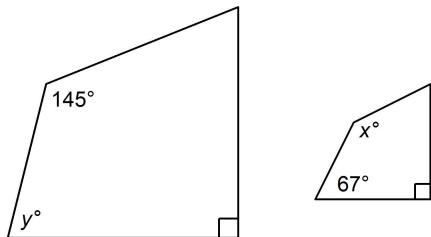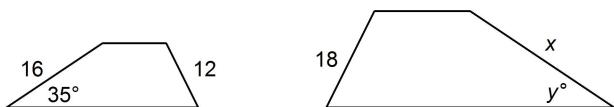
16. Which of rectangles A, B, and C are scale diagrams of the shaded rectangle?
For each scale diagram you identify, state the scale factor.

A

B

C
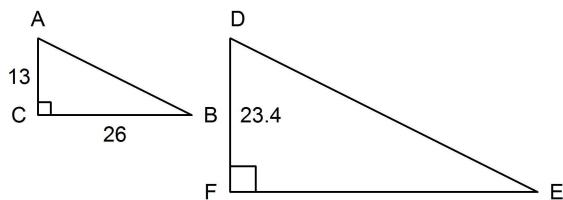
17. These polygons are similar. Determine the values of $x°$ and $y°$.
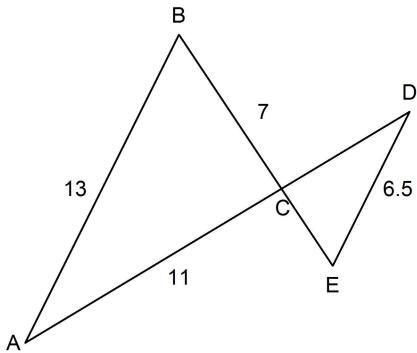
18. These quadrilaterals are similar. Determine the values of x and $y°$.
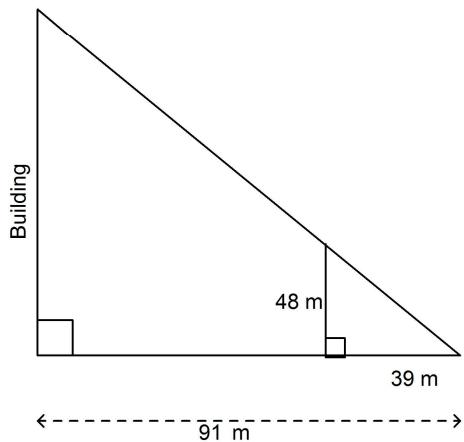
19. Determine the length of EF in these similar triangles.
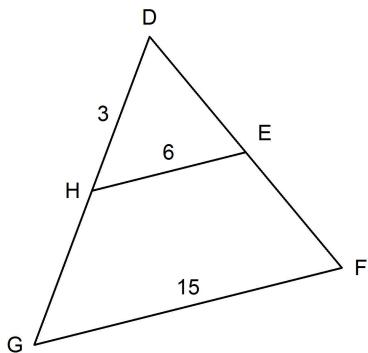
20. Determine the lengths of CD and CE in these similar triangles.

21. This scale diagram shows the measurements a surveyor made to determine the height of a building. What is this height?

Problem

22. Determine the length of HG.

Similar Triangles and Polygons Test V2
Answer Section

MULTIPLE CHOICE

1. ANS: D   PTS: 1   DIF: Easy
    REF: 7.1 Scale Diagrams and Enlargements   LOC: 9.SS4
    TOP: Shape and Space (Transformations)   KEY: Procedural Knowledge
2. ANS: C   PTS: 1   DIF: Easy
    REF: 7.1 Scale Diagrams and Enlargements   LOC: 9.SS4
    TOP: Shape and Space (Transformations)   KEY: Procedural Knowledge
3. ANS: D   PTS: 1   DIF: Easy   REF: 7.2 Scale Diagrams and Reductions
    LOC: 9.SS4   TOP: Shape and Space (Transformations)
    KEY: Procedural Knowledge
4. ANS: B   PTS: 1   DIF: Easy   REF: 7.2 Scale Diagrams and Reductions
    LOC: 9.SS4   TOP: Shape and Space (Transformations)
    KEY: Procedural Knowledge
5. ANS: D   PTS: 1   DIF: Easy   REF: 7.2 Scale Diagrams and Reductions
    LOC: 9.SS4   TOP: Shape and Space (Transformations)
    KEY: Procedural Knowledge
6. ANS: C   PTS: 1   DIF: Moderate   REF: 7.2 Scale Diagrams and Reductions
    LOC: 9.SS4   TOP: Shape and Space (Transformations)
    KEY: Procedural Knowledge
7. ANS: A   PTS: 1   DIF: Easy   REF: 7.3 Similar Polygons
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge
8. ANS: B   PTS: 1   DIF: Easy   REF: 7.3 Similar Polygons
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge
9. ANS: B   PTS: 1   DIF: Easy   REF: 7.3 Similar Polygons
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge
10. ANS: A   PTS: 1   DIF: Moderate   REF: 7.3 Similar Polygons
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge
11. ANS: C   PTS: 1   DIF: Easy   REF: 7.4 Similar Triangles
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge
12. ANS: C   PTS: 1   DIF: Easy   REF: 7.4 Similar Triangles
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge
13. ANS: A   PTS: 1   DIF: Moderate   REF: 7.4 Similar Triangles
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge

SHORT ANSWER

14. ANS:
    The scale factor is 2.

    PTS: 1   DIF: Moderate   REF: 7.1 Scale Diagrams and Enlargements
    LOC: 9.SS4   TOP: Shape and Space (Transformations)
    KEY: Procedural Knowledge

15. ANS:
    The scale factor is 2.5.

    PTS: 1   DIF: Moderate   REF: 7.1 Scale Diagrams and Enlargements
    LOC: 9.SS4   TOP: Shape and Space (Transformations)
    KEY: Procedural Knowledge

16. ANS:
    Rectangle B; scale factor is 2.
    Rectangle C; scale factor is 1.5.

    PTS: 1   DIF: Moderate   REF: 7.1 Scale Diagrams and Enlargements
    LOC: 9.SS4   TOP: Shape and Space (Transformations)
    KEY: Procedural Knowledge

17. ANS:
    $x = 145°$
    $y = 67°$

    PTS: 1   DIF: Easy   REF: 7.3 Similar Polygons
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Conceptual Understanding

18. ANS:
    $x = 24$
    $y° = 35°$

    PTS: 1   DIF: Moderate   REF: 7.3 Similar Polygons
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Conceptual Understanding | Procedural Knowledge

19. ANS:
    $EF = 46.8$

    PTS: 1   DIF: Easy   REF: 7.4 Similar Triangles
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge

20. ANS:
    $CD = 5.5$
    $CE = 3.5$

    PTS: 1   DIF: Moderate   REF: 7.4 Similar Triangles
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge

21. ANS:
    112 m

    PTS: 1   DIF: Moderate   REF: 7.4 Similar Triangles
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge

PROBLEM

22. ANS:

    $$\frac{DG}{DH} = \frac{GF}{HE}$$

    $$\frac{3 + HG}{3} = \frac{15}{6}$$

    $$3 \times \frac{3 + HG}{3} = \frac{15}{6} \times 3$$

    $$3 + HG = \frac{15 \times 3}{6}$$

    $$3 + HG = 7.5$$

    $$3 + HG - 3 = 7.5 - 3$$

    $$HG = 4.5$$

    The length of HG is 4.5 units.

    PTS: 1   DIF: Difficult   REF: 7.4 Similar Triangles
    LOC: 9.SS3   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Problem-Solving Skills | Procedural Knowledge