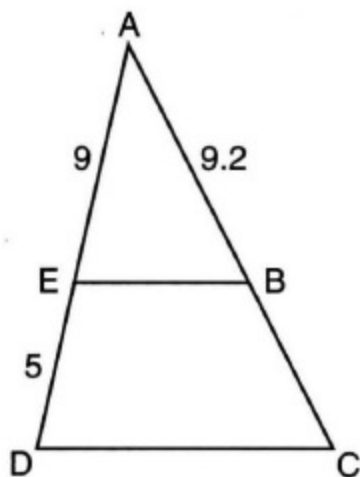


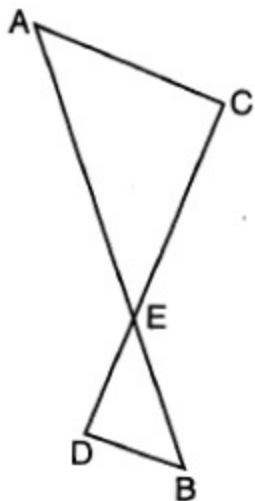
1. In the diagram of $\triangle ADC$ below, $\overline{EB} \parallel \overline{DC}$, $AE = 9$, $ED = 5$, and $AB = 9.2$



What is the length of \overline{AC} , to the *nearest tenth*?

- (1) 5.1 (2) 5.2 **(3) 14.3** (4) 14.4
2. A three-inch line segment is dilated by a scale factor of 6 and centered at its midpoint. What is the length of its image?
- (1) 9 inches (2) 2 inches (3) 15 inches **(4) 18 inches**
3. The graphs of the lines represented by the equations $y = \frac{1}{3}x + 7$ and $y = -\frac{1}{3}x - 2$ are
- (1) intersecting, but not perpendicular**
 (2) perpendicular
 (3) horizontal
 (4) parallel
4. If $\triangle ABC$ is dilated by a scale factor of 3, which statement is true of the image $\triangle A'B'C'$?
- (1) $m\angle A' = 3(m\angle A)$ (2) $3(m\angle C') = m\angle C$
(3) $B'C' = 3BC$ (4) $3A'B' = AB$
5. What is the image of the point $(-5, 2)$ under the translation $T_{3, -4}$?
- (1) $(-2, -2)$** (2) $(-8, 6)$ (3) $(-15, -8)$ (4) $(-9, 5)$
6. If $\triangle RST \sim \triangle ABC$, $m\angle A = 7 + 8x$, $m\angle C = 4x + 8$, and $m\angle R = 3x - 60$, find $m\angle C$
- (1) 50 **(2) 55** (3) 65 (4) 60

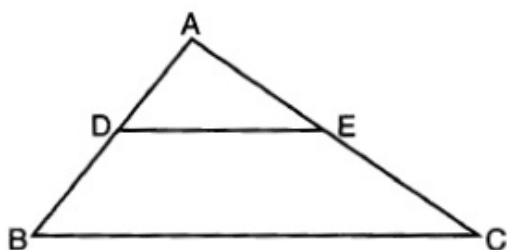
7. As shown in the diagram below, \overline{AB} and \overline{CD} intersect at E , and $\overline{AC} \parallel \overline{BD}$.



Given $\triangle AEC \sim \triangle BED$, which equation is true?

- | | |
|-------------------------------------|-------------------------------------|
| (1) $\frac{EC}{AE} = \frac{BE}{ED}$ | (2) $\frac{ED}{EC} = \frac{AC}{BD}$ |
| (3) $\frac{CE}{DE} = \frac{EB}{EA}$ | (4) $\frac{AE}{BE} = \frac{AC}{BD}$ |

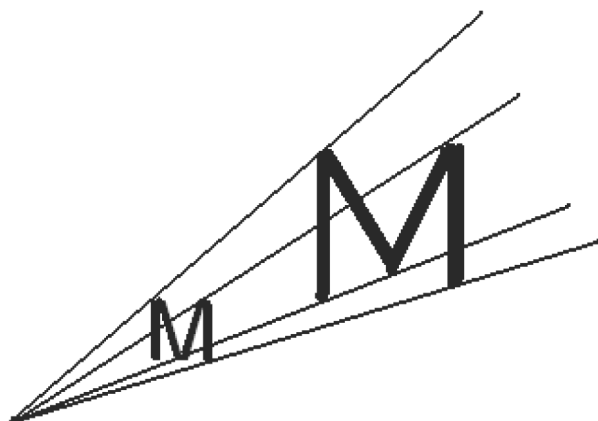
8. In the diagram below, $\triangle ABC \sim \triangle ADE$



Which measurements are justified by this similarity?

- | | |
|--|--|
| (1) $AD = 3$, $AB = 9$, $AE = 5$, and $AC = 10$ | (2) $AD = 3$, $AB = 6$, $AE = 4$, and $AC = 12$ |
| (3) $AD = 5$, $AB = 8$, $AE = 7$, and $AC = 10$ | (4) $AD = 2$, $AB = 6$, $AE = 5$, and $AC = 15$ |
9. Which equation represents a line that passes through the point $(-2, 6)$ and is parallel to the line whose equation is $3x - 4y = 6$?
- | | |
|---------------------|--------------------|
| (1) $-3x + 4y = 30$ | (2) $4x + 3y = 10$ |
| (3) $-4x + 3y = 26$ | (4) $3x + 4y = 18$ |

10. Which transformation for letter M is shown in the accompanying diagram?



- (1) dilation
 - (2) translation
 - (3) line reflection
 - (4) rotation
11. Two right triangles must be congruent if
- (1) the corresponding legs are congruent
 - (2) the areas are equal
 - (3) the lengths of the hypotenuses are equal
 - (4) an acute angle in each triangle is congruent
12. The lines whose equations are $2x + 3y = 4$ and $y = mx + 6$ will be perpendicular when m is
- (1) $\frac{3}{2}$
 - (2) $-\frac{3}{2}$
 - (3) $-\frac{2}{3}$
 - (4) $\frac{2}{3}$
13. When $\triangle ABC$ is dilated by a scale factor of 2, its image is $\triangle A'B'C'$. Which statement is true?
- (1) perimeter of $\triangle ABC$ = perimeter of $\triangle A'B'C'$
 - (2) $\angle A \cong \angle A'$
 - (3) $2(\text{area of } \triangle ABC) = \text{area of } \triangle A'B'C'$
 - (4) $\overline{AC} \cong \overline{A'C'}$
14. An equation of a line perpendicular to the line represented by the equation $y = -\frac{1}{2}x - 5$ and passing through $(6, -4)$ is
- (1) $y = 2x - 16$
 - (2) $y = -\frac{1}{2}x + 4$
 - (3) $y = 2x + 14$
 - (4) $y = -\frac{1}{2}x - 1$
15. When the transformation $T_{2,-1}$ is performed on point A , its image is point $A'(-3, 4)$. What are the coordinates of A ?
- (1) $(-1, 3)$
 - (2) $(-6, -4)$
 - (3) $(5, -5)$
 - (4) $(-5, 5)$

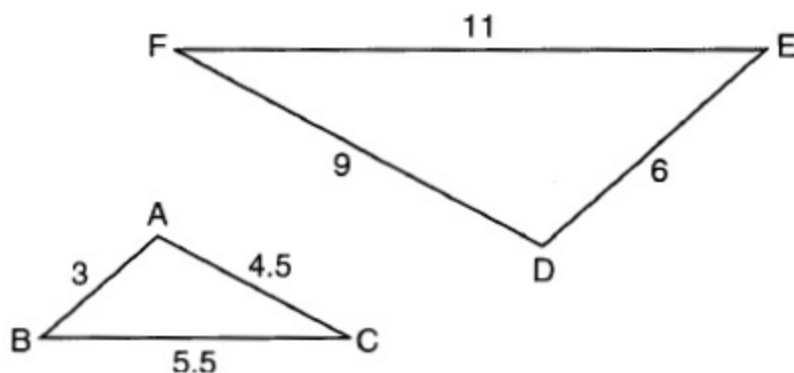
17 March 2017

Similarity & Cumulative Exam

16. A polygon is transformed according to the rule: $(x, y) \rightarrow (x + 2, y)$. Every point of the polygon moves two units in which direction?

- (1) down (2) left (3) up **(4) right**

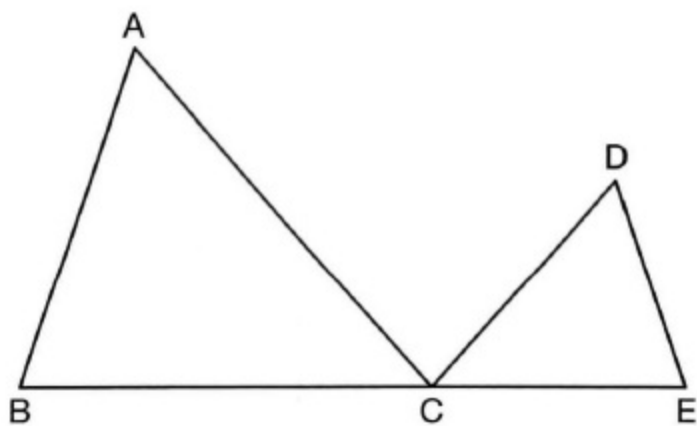
17. In the diagram below, $\triangle DEF$ is the image of $\triangle ABC$ after a clockwise rotation of 180° and a dilation where $AB = 3$, $BC = 5.5$, $AC = 4.5$, $DE = 6$, $FD = 9$, and $EF = 11$.



Which relationship must always be true?

- (1) $\frac{m\angle A}{m\angle C} = \frac{m\angle F}{m\angle D}$ (2) $\frac{m\angle A}{m\angle D} = \frac{1}{2}$
 (3) $\frac{m\angle C}{m\angle F} = \frac{2}{1}$ **(4) $\frac{m\angle B}{m\angle E} = \frac{m\angle C}{m\angle F}$**

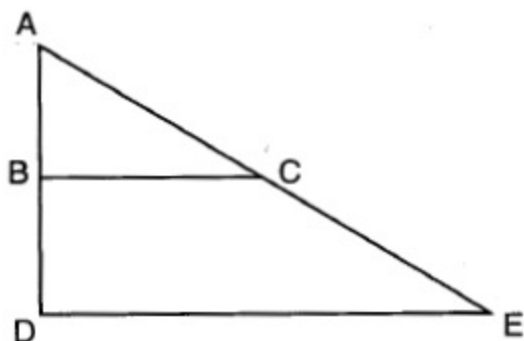
18. In the diagram below, $\triangle ABC \sim \triangle DEC$.



If $AC = 12$, $DC = 7$, $DE = 5$, and the perimeter of $\triangle ABC$ is 30, what is the perimeter of $\triangle DEC$?

- (1) 12.5 (2) 14.0 (3) 14.8 **(4) 17.5**

19. The image of $\triangle ABC$ after a dilation of scale factor k centered at point A is $\triangle ADE$, as shown in the diagram below.



Which statement is always true?

- $$\begin{array}{ll} \text{(1)} \quad AC = CE & \text{(2)} \quad \overline{BC} \parallel \overline{DE} \\ \text{(3)} \quad \overline{AD} \perp \overline{DE} & \text{(4)} \quad 2AB = AD \end{array}$$

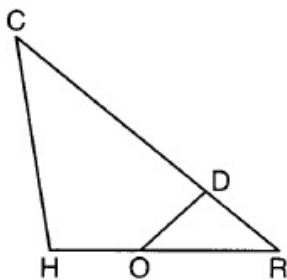
20. Which transformation would *not* always produce an image that would be congruent to the original figure?

(1) dilation (2) rotation (3) reflection (4) translation

21. One function of a movie projector is to enlarge the image on the film. This procedure is an example of a

- (1) dilation (2) line reflection
(3) line of symmetry (4) translation

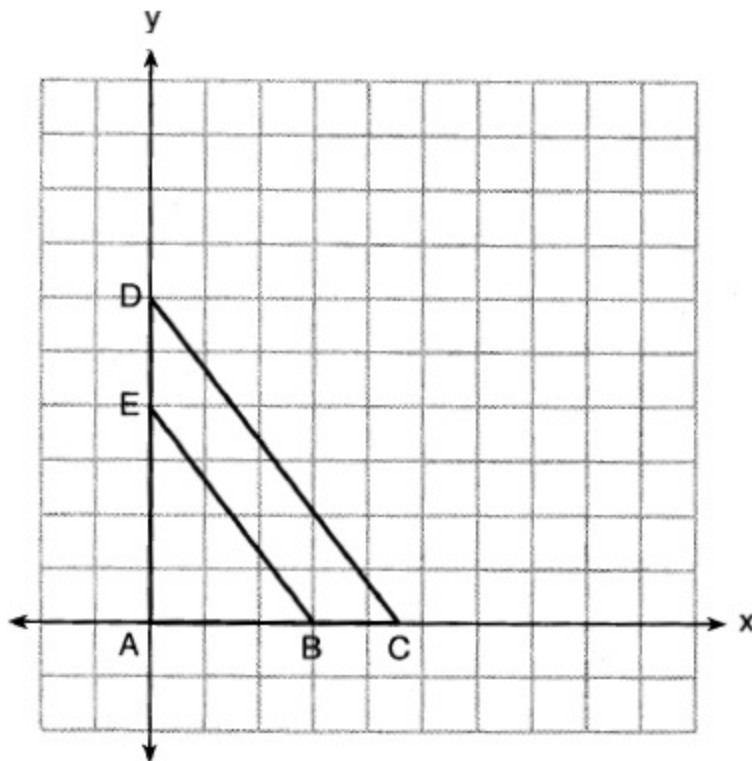
22. In triangle CHR , O is on \overline{HR} , and D is on \overline{CR} so that $\angle H \cong \angle RDO$.



If $RD = 4$, $RO = 6$, and $OH = 4$, what is the length of \overline{CD} ?

- (1) 11 (2) 15 (3) $2\frac{2}{3}$ (4) $6\frac{2}{3}$

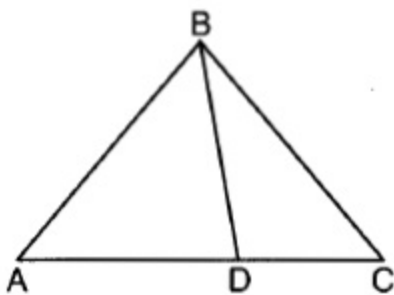
23. In the diagram below, $\triangle ABE$ is the image of $\triangle ACD$ after a dilation centered at the origin. The coordinates of the vertices are $A(0,0)$, $B(3,0)$, $C(4.5,0)$, $D(0,6)$, and $E(0,4)$.



The ratio of the lengths of \overline{BE} to \overline{CD} is

- (1) $\frac{3}{4}$ (2) $\frac{4}{3}$ (3) $\frac{3}{2}$ **(4) $\frac{2}{3}$**

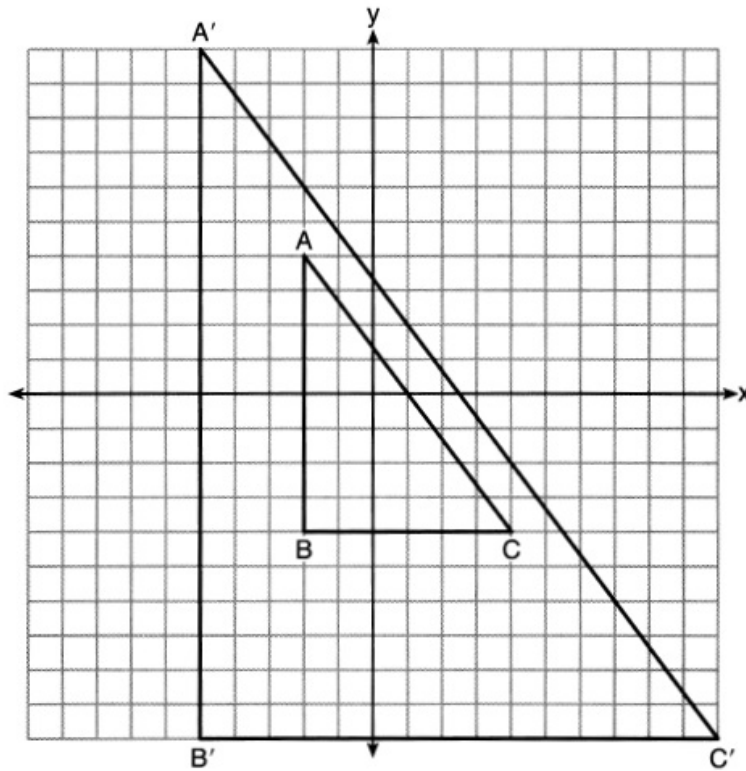
24. the diagram below, $m\angle BDC = 100^\circ$ and $m\angle A = 50^\circ$, and $m\angle DBC = 30^\circ$.



Which statement is true?

- (1) $m\angle ABD = 80^\circ$ (2) $\triangle ABD$ is scalene.
 (3) $\triangle ABD$ is obtuse. **(4) $\triangle ABC$ is isosceles.**

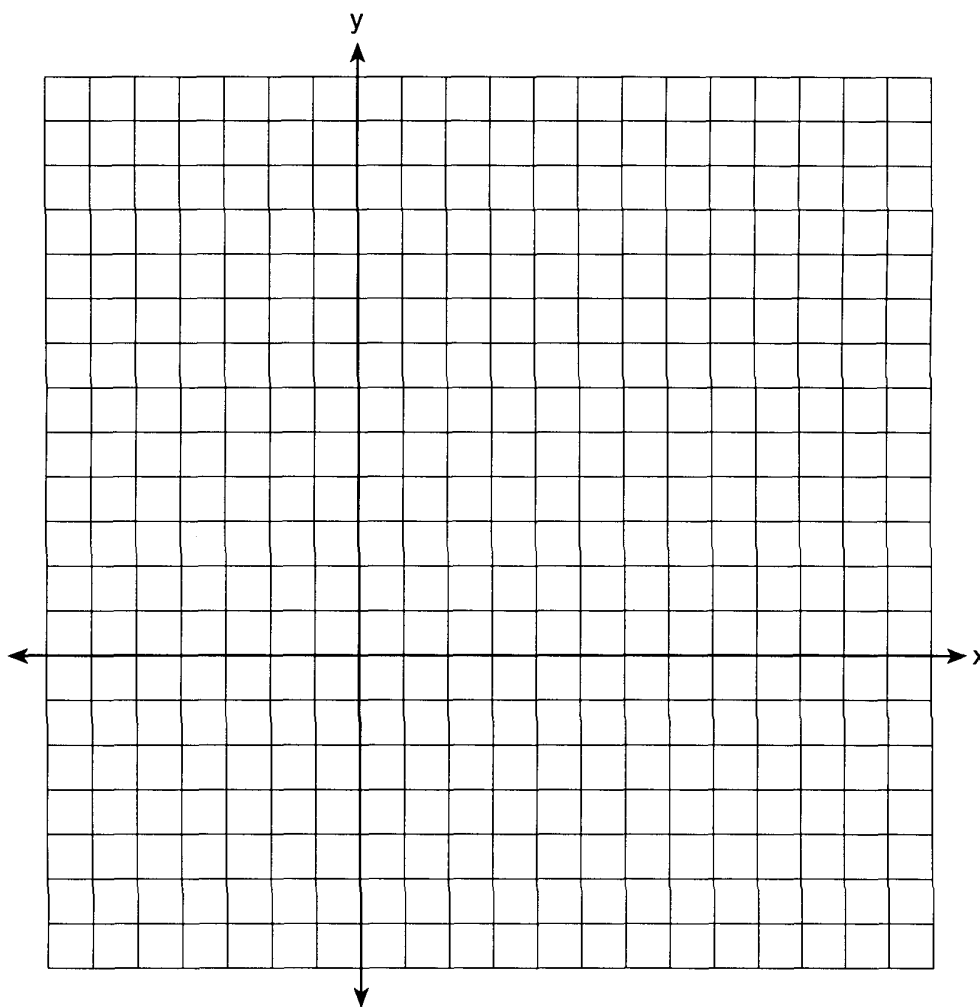
25. In the diagram below, $\triangle A'B'C'$ is the image of $\triangle ABC$ after a transformation.



Describe the transformation that was performed.

Explain why $\triangle A'B'C' \sim \triangle ABC$.

26. On the provided set of axes below, graph a triangle whose coordinates are $A(2,1)$, $B(6,2)$, and $C(3,5)$. With respect to this triangle, draw a dilation of scale factor 2 whose center of dilation is $(2,1)$.



Answer Key
Similarity Cumulative Review

1. 3
2. 4
3. 1
4. 3
5. 1
6. 2
7. 4
8. 4
9. 1
10. 1
11. 1
12. 1
13. 2
14. 1
15. 4
16. 4
17. 4
18. 4
19. 2
20. 1
21. 1
22. 1
23. 4
24. 4
25. Dilation of $\frac{5}{2}$
centered at the
origin is
written. A
correct
explanation is
written.
26. Triangle ABC
and its dilation
are correctly
graphed and
labelled.