

Sample

SEMESTER

1

Mathematics

Assesslet

Geometry

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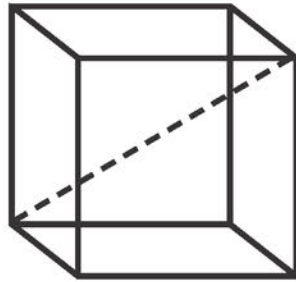
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Directions

- Read all the directions for each question carefully and think about the answer.
- This Assesslet contains seven items. Questions 1 and 2 are selected-response items where you choose the one **BEST** answer. Answer each question by filling in the circle **on your answer document**.
- Questions 3, 4, and 5 are constructed-response items. Use the scratch paper provided to plan your response. Write your answer(s) on the lines provided **on your answer document**.
- Questions 6 and 7 are extended-response items. Use the scratch paper provided to plan your response. Write your answer(s) on the lines provided **on your answer document**.
- Be sure to write your answers in the spaces provided **on the answer document**.

Item 1

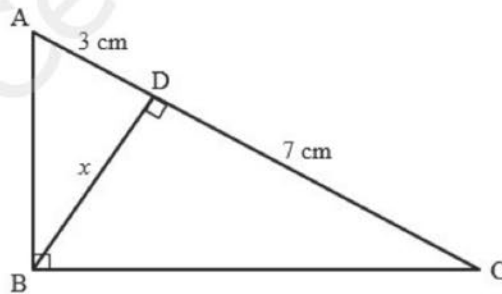
A cube has a volume of 125 in³. Find the length of the diagonal connecting the top right corner (A) to the bottom left corner (B).



- A $5\sqrt{2}$ inches
- B $5\sqrt{3}$ inches
- C $\sqrt{25}$ inches
- D 50 inches

Item 2

Side AB = 3 cm and side BC = 7 cm.

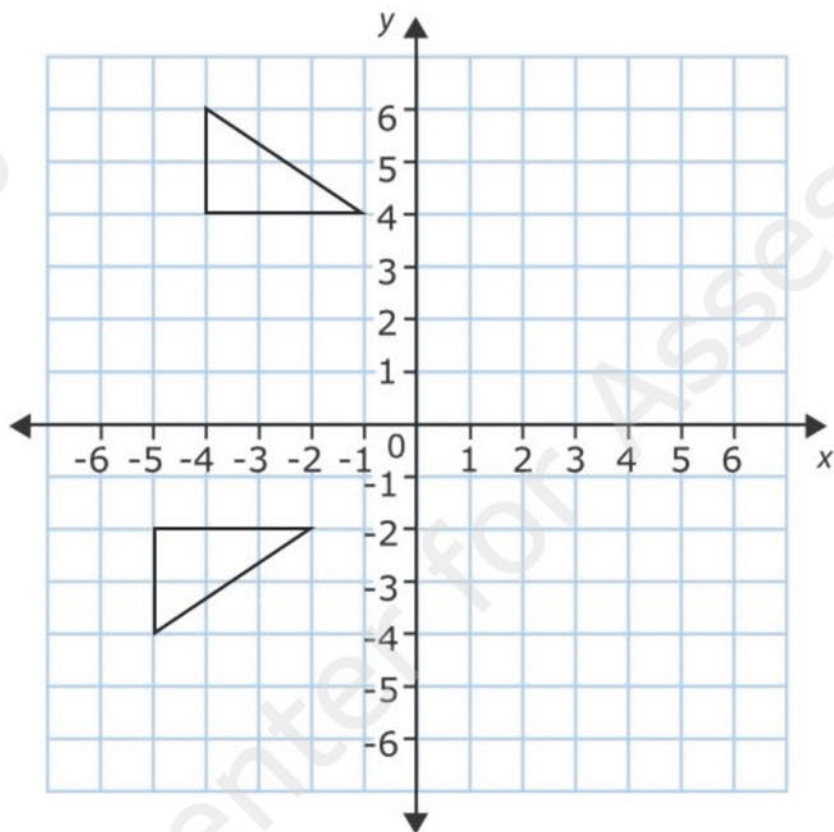


Find the length of x in the triangle.

- A $\sqrt{10}$ cm
- B $\sqrt{21}$ cm
- C 21 cm
- D 36 cm

Item 3

Consider $\triangle ABC$ and $\triangle A'B'C'$ below.



Students were asked to describe the set of transformations to take $\triangle ABC$ into $\triangle A'B'C'$. For each student response listed below, determine if the answer is correct or incorrect and explain your reasoning.

Response A: Translate along $(-2, -1)$, reflect over y -axis

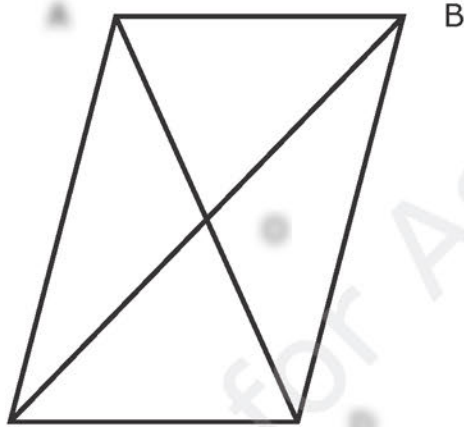
Response B: Translate along $(-1, -2)$, reflect over x -axis

Response C: Reflect over y -axis, translate along $(-2, 1)$, reflect over the line $y = 1$

Response D: Reflect over x -axis, translate along $(-2, 1)$, reflect over the line $y = 1$

Item 4

Consider the ~~parallelogram~~ below.



Prove that ~~AD~~ and ~~BC~~ bisect each other.

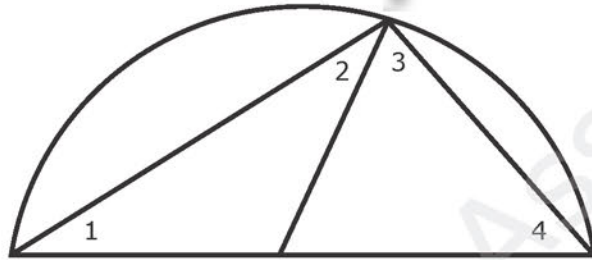
Item 5

$\triangle ABC$ has vertices $A(3,1)$, $B(4,1)$, and $C(3,4)$. $\triangle ABC$ is reflected over the x -axis, reflected over the y -axis, translated two units vertically and translated four units to the right. What are the final coordinates of point C ?

Solve this problem in two ways and explain your answers.

Item 6

Let O be the center of the semicircle below.



Part A

Explain why $\angle 1 = \angle 2$.

Part B

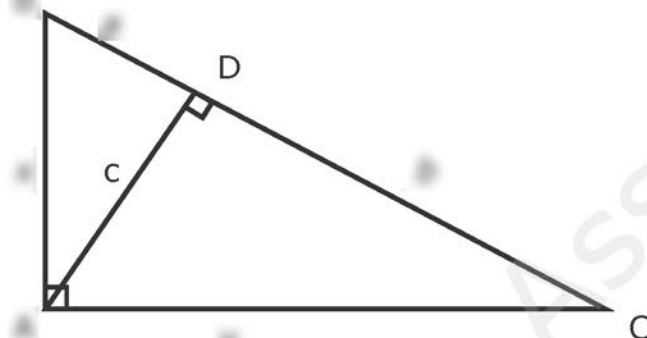
Explain why $\angle 3 = \angle 4$.

Part C

Show that $\triangle ABC$ is a right triangle.

Item 7

Consider the following figure. Let $a + b = c$.



Part A

Show that $\triangle ABC \sim \triangle DAC$.

Part B

Use the similarity established in Part A to deduce that $y^2 = bc$.

Part C

Show that $\triangle ABC \sim \triangle CBA$.

Part D

Use the similarity established in Part B to deduce that $x^2 = ab$.

Part E

Use the equations established in Part B and Part D to prove the Pythagorean Theorem.