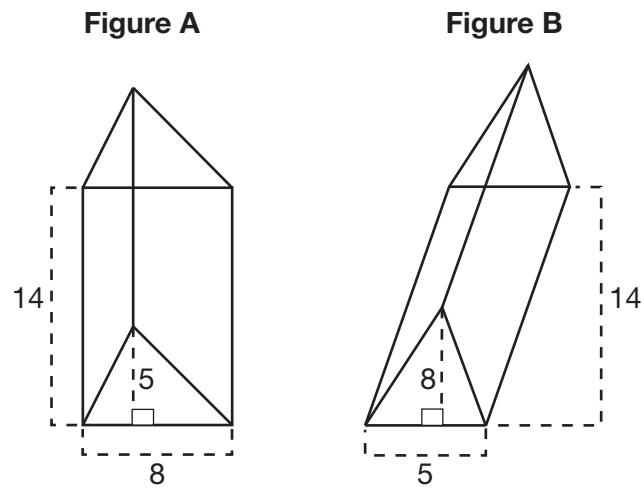


**26** Determine and state, in terms of  $\pi$ , the area of a sector that intercepts a  $40^\circ$  arc of a circle with a radius of 4.5.

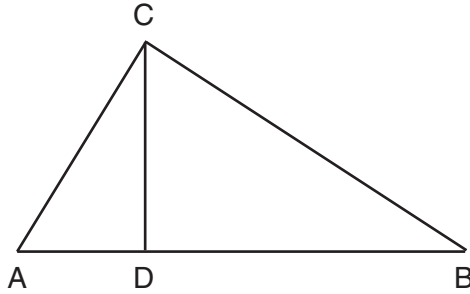
27 The diagram below shows two figures. Figure *A* is a right triangular prism and figure *B* is an oblique triangular prism. The base of figure *A* has a height of 5 and a length of 8 and the height of prism *A* is 14. The base of figure *B* has a height of 8 and a length of 5 and the height of prism *B* is 14.



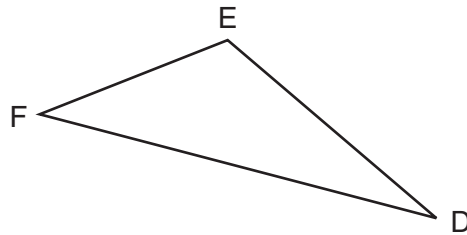
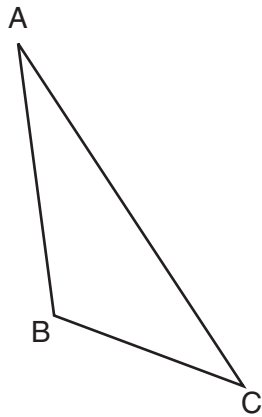
Use Cavalieri's Principle to explain why the volumes of these two triangular prisms are equal.

**28** When volleyballs are purchased, they are not fully inflated. A partially inflated volleyball can be modeled by a sphere whose volume is approximately  $180 \text{ in}^3$ . After being fully inflated, its volume is approximately  $294 \text{ in}^3$ . To the *nearest tenth of an inch*, how much does the radius increase when the volleyball is fully inflated?

29 In right triangle  $ABC$  shown below, altitude  $\overline{CD}$  is drawn to hypotenuse  $\overline{AB}$ . Explain why  $\triangle ABC \sim \triangle ACD$ .



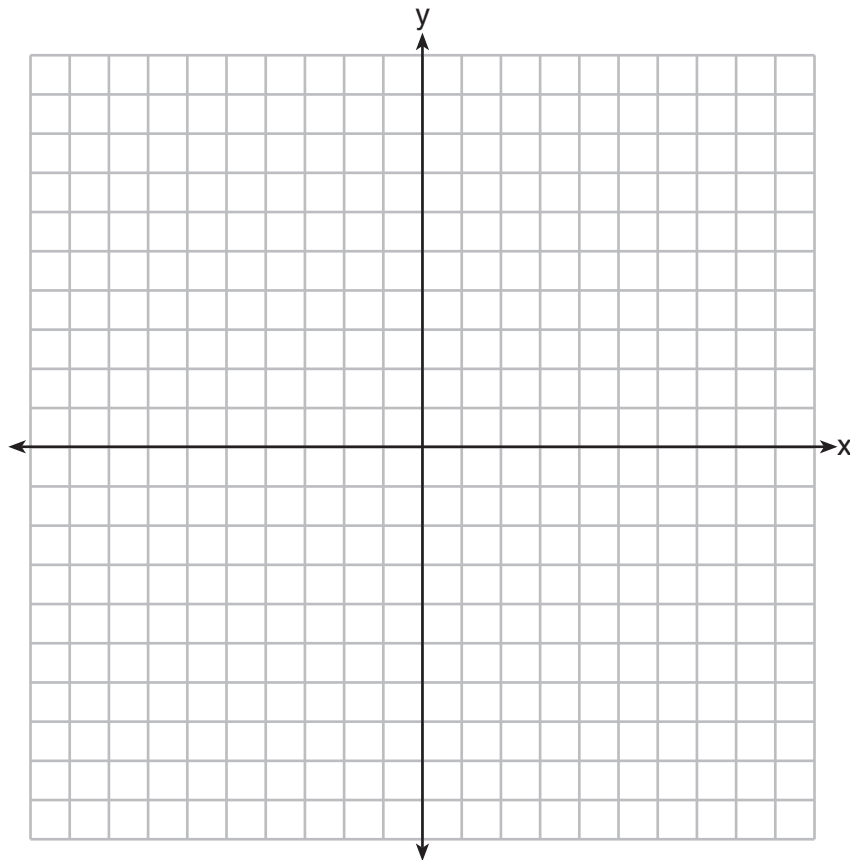
30 Triangle  $ABC$  and triangle  $DEF$  are drawn below.



If  $\overline{AB} \cong \overline{DE}$ ,  $\overline{AC} \cong \overline{DF}$ , and  $\angle A \cong \angle D$ , write a sequence of transformations that maps triangle  $ABC$  onto triangle  $DEF$ .

**31** Line  $n$  is represented by the equation  $3x + 4y = 20$ . Determine and state the equation of line  $p$ , the image of line  $n$ , after a dilation of scale factor  $\frac{1}{3}$  centered at the point  $(4,2)$ .  
[The use of the set of axes below is optional.]

Explain your answer.



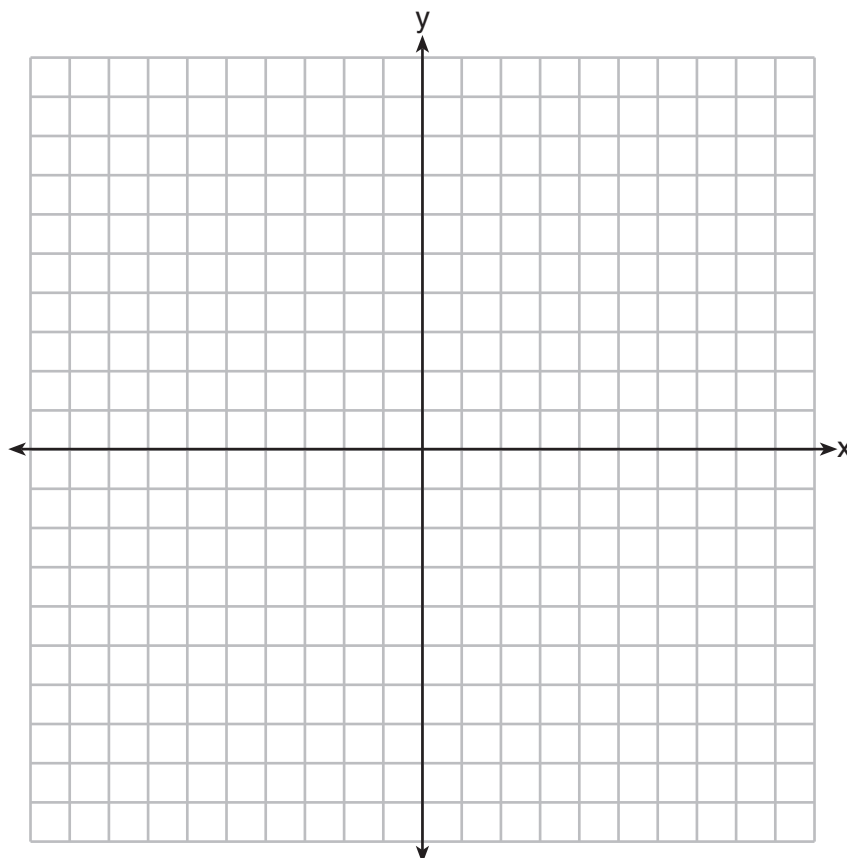
Part III

Answer all 3 questions in this part. Each correct answer will receive 4 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [12]

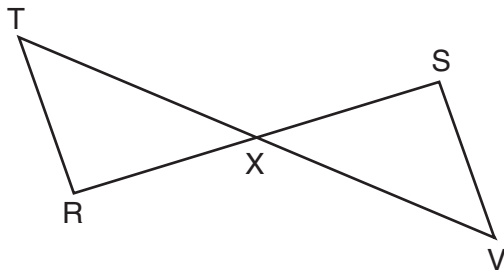
32 Triangle  $ABC$  has vertices at  $A(-5,2)$ ,  $B(-4,7)$ , and  $C(-2,7)$ , and triangle  $DEF$  has vertices at  $D(3,2)$ ,  $E(2,7)$ , and  $F(0,7)$ . Graph and label  $\triangle ABC$  and  $\triangle DEF$  on the set of axes below.

Determine and state the single transformation where  $\triangle DEF$  is the image of  $\triangle ABC$ .

Use your transformation to explain why  $\triangle ABC \cong \triangle DEF$ .



33 Given:  $\overline{RS}$  and  $\overline{TV}$  bisect each other at point  $X$   
 $\overline{TR}$  and  $\overline{SV}$  are drawn



Prove:  $\overline{TR} \parallel \overline{SV}$