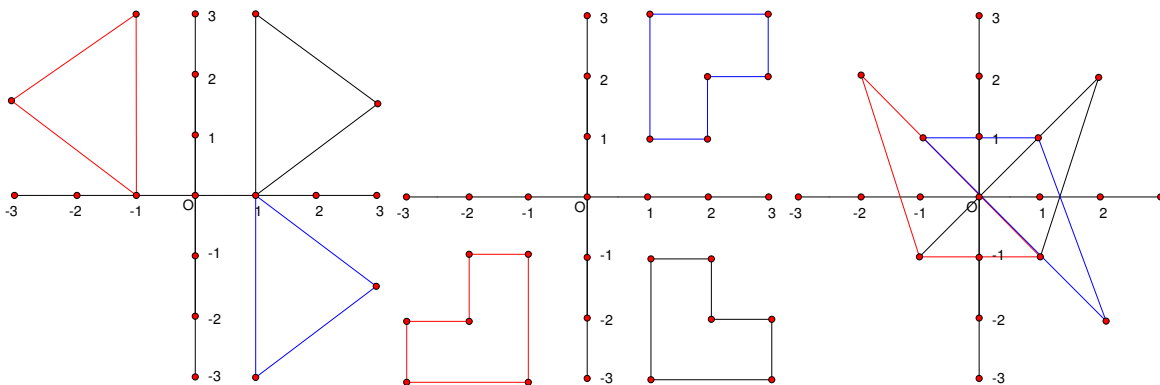


Name: \_\_\_\_\_

Date: \_\_\_\_\_

- Surface area of a cube is the area of the faces 6 times, or  $SA = 6s^2 = 6(5^2) = \boxed{150}$
  - Surface area of a rectangular solid with side lengths  $l, w, h$  is  $SA = 2(lw + lh + wh) = 2(4 \cdot 7 + 4 \cdot 10 + 7 \cdot 10) = \boxed{276}$
  - Surface area of a cylinder with radius  $r$  and height  $h$  is  $SA = 2\pi r^2 + 2\pi r \cdot h = 2 \cdot 3.14 \cdot 3^2 + 2 \cdot 3.14 \cdot 3 \cdot 8.5 = \boxed{216.66}$
- Draw a square foot on a paper. How many square inches are in it?  $144$ . So  $144 \text{ in}^2 = 1 \text{ ft}^2$ . Similarly,  $1 \text{ m}^2 = 10,000 \text{ cm}^2$ .
  - $17 \text{ ft}^2 \times 144 \text{ in}^2 = \boxed{2448} \text{ in}^2$
  - $5040 \text{ in}^2 \div 144 \text{ in}^2 = \boxed{35} \text{ ft}^2$
  - $37250 \text{ cm}^2 \div 10000 \text{ cm}^2 = \boxed{3.725} \text{ m}^2$
- The fabric is 1 yd by 5 yds. Convert to inches: 36 in by 180 in. The area of the fabric is  $36 \times 180 = 6480 \text{ in}^2$ . The area of the flags are  $\frac{1}{2} \cdot b \cdot h = \frac{1}{2} \cdot 11 \cdot 36 = 198 \text{ in}^2$ . She makes 28 flags, which has area  $28 \times 198 = 5544 \text{ in}^2$ . So the area of the fabric remaining is  $6480 - 5544 = 936 \text{ in}^2$ . But the problem asks for square FOOTAGE. So we must convert to square feet using the relationship established in the previous problem.  $936 \div 144 = \boxed{6.5 \text{ ft}^2}$
- The volume of a cylinder is  $V = \pi r^2 h$ .
  - If the height is doubled, then we replace  $h$  with  $2h$ , and we have  $V = \pi r^2(2h) = 2\pi r^2 h$ . So the volume is multiplied by  $\boxed{2}$
  - If the radius is doubled, then we replace  $r$  with  $2r$ , and we have  $V = \pi(2r)^2 h = 4\pi r^2 h$ . So the volume is multiplied by  $\boxed{4}$
- The problem asked that you reflect across the  $x$ -axis and then separately reflected across the  $y$ -axis. If you did one, and then the other in a sequence, you were not marked wrong. The reflections across the  $x$  are shown in blue, and the  $y$  in red.



- AVERAGE SPEED = TOTAL DISTANCE  $\div$  TOTAL TIME.**

The total time was  $1.5 + 3 = 4.5$  hours. The distance from the first leg of the journey we get from the equation  $d = rt$ . So the first part's distance is  $d = 70 \times 1.5 = 105$  miles. The second part's distance is  $d = 65 \times 3 = 195$ . So the total distance is  $105 + 195 = 300$ .



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So the average speed is  $300 \div 4.5 = \boxed{66.\bar{6}}$  mph

7. Each of the 32 teams pair up into 16 pairs of 2, and they play 16 games. Then the 16 winners from this round pair up into 8 groups of 2 and play 8 games. Then the 8 winners pair up into 4 pairs of 2, and then the 4 winners pair up into 2 pairs of 2, and then the 2 winners play the championship game. So there are  $16 + 8 + 4 + 2 + 1 = \boxed{31}$  games.
8. A mason can finish  $\frac{1}{3}$  of the bathroom in a day. The helper can finish  $\frac{1}{6}$  of a job in a day. So together, they complete  $\frac{1}{3} + \frac{1}{6} = \frac{1}{2}$  of a job in a day. So it will take them  $\boxed{2 \text{ days}}$  to complete one job.
9. Let  $x$  be the number of bench seats and let  $y$  be the number of box seats. We know that  $x = 5000 + y$  and  $7.5x + 12.5y = 637500$ . We want to solve for  $x$ , so rewrite the first equation as  $y = x - 5000$  and substitute:  $7.5x + 12.5(x - 5000) = 637500 \Rightarrow 7.5x + 12.5x - 62500 = 637500 \Rightarrow 20x = 700,000 \Rightarrow x = 700,000 \div 20 = \boxed{35,000}$ .