

1. The rectangular sheet of paper is 2 feet by 3 feet. How many inches is this? 2 feet = 24 inches, and 3 feet = 36 inches. So the area of the sheet is $24 \times 36 = 864$ square inches. The cards are 2 inches by 3 inches, which have area $2 \times 3 = 6$. So how many cards of area 6 can we get in a sheet of area 864? Divide: $864 \div 6 = \boxed{144}$.

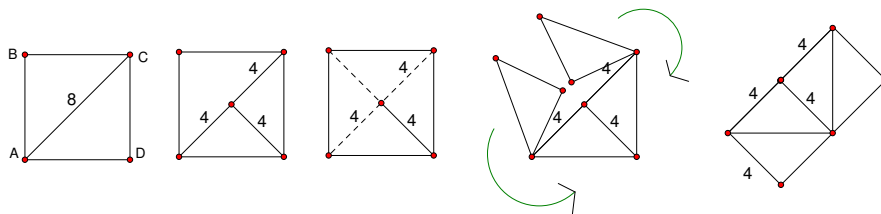
2. Like the problem before this one, we need to convert units. Amy can mow 600 square yards in 1.5 hours. How many square FEET is in this many square YARDS? There are 3 feet in 1 yard, and in a square with side lengths one yard, the side length is 3 feet, so a square yard has $3 \text{ feet} \times 3 \text{ feet} = 9 \text{ feet}^2$. So 1 square yard = 9 square feet. So 600 square yards = 600×9 square feet.

So how many minutes would it take her to mow 600 square feet? What proportion is 600 square feet of the whole yard? $\frac{600 \text{ square feet}}{9 \times 600 \text{ square feet}} = \frac{1}{9}$. So 600 square feet is $\frac{1}{9}$ of the whole yard. It took her $1\frac{1}{2}$ hours to do the whole yard, so it will take her $\frac{1}{9}$ of the whole time to do $\frac{1}{9}$ of the whole yard. So $1\frac{1}{2}$ hour = 90 minutes, and $\frac{1}{9} \times 90 = \boxed{10 \text{ minutes}}$

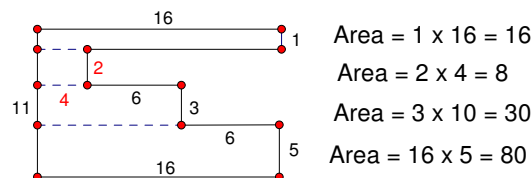
3. Since $ABCD$ is a square with area 16 sq. meters the side length is 4. Since E and F are midpoints of sides AB and BC , respectively, then $AE = EB = BF = FC = 2$. Recall that the area of a triangle is $\frac{1}{2}bh$, where b is the base and h is the height. So triangle ABC has base $BC = 4$ and height $AB = 4$, so the area is $\frac{4 \times 4}{2} = 8$. Then we will find the area of triangle EBF . The base $BF = 2$, and the height $BE = 2$, so area of $EBF = \frac{2 \times 2}{2} = 2$. So the area of trapezoid $AEFC$ is the area of $\triangle ABC - \triangle EBF = 8 - 2 = \boxed{6}$

4. Problem 4 was omitted because it was missing a length, so there was more than one correct answer.

5. Construct a line connecting point D to the midpoint of diagonal AC . Then the new line splits AC in half, and each length is 4. Now “cut” the square along the dotted lines shown. Then move the triangles around to connect to the bottom of the image. Now you have a rectangle with width 4 and length 8. So the area is $4 \times 8 = \boxed{32}$

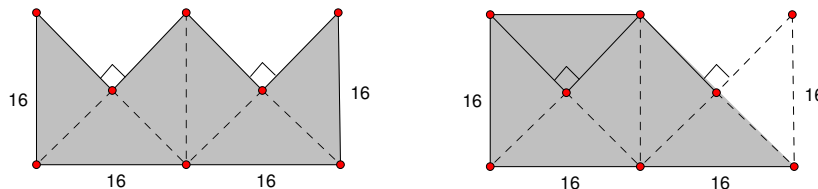


6. Cut the shape into smaller pieces as shown. Find each area, then add them together. $16 + 8 + 30 + 80 = \boxed{134}$

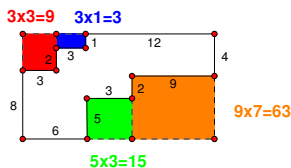


7. Cut the image into smaller rectangles, find each smaller rectangle's area, and add. $\boxed{62}$

8. First, cut and move a piece of the diagram to make it easier to find the area, like shown below. Now we have a full square + half a square. The area of the full square is $16 \times 16 = 256$, and the half square is $256 \div 2 = 128$. So the total area is $256 + 128 = \boxed{384}$.



9. We must find the length of the side of the shaded square. Counting along the bottom side of the shaded square, we see that there are four lengths of 3, so the line connecting the square is $3 \times 4 = 12$ long. We know that the big square has length 7, so the side length of the shaded square is $12 - 7 = 5$. So the area of the shaded square is $5 \times 5 = \boxed{25}$
10. It is easiest to find the area of the big rectangle ($11 \times 18 = 198$) and subtract out the little rectangles, as shown in the diagram.



So we see that the small rectangles have areas 9, 3, 15, and 63, so we subtract $198 - 9 - 3 - 15 - 63 = \boxed{108}$