Find the area of plane figures using length and width by visualizing and counting unit squares

Teacher
School
Math
Period

Warm-up question:

In an effort to encourage students and community members to exercise more, Einstein Elementary School is going to create a paved fitness trail around the school’s campus. Determine the area of the fitness trail.
How much physical activity is needed?
Physical activity is important for everyone, but how much you need depends on your age.

**ADULTS**
(18 to 64 years)
Adults should do at least 2 hours and 30 minutes each week of moderate physical activity or at least 75 minutes each week of vigorous physical activity, or a combination of both. An activity of moderate intensity can be increased up to 600 minutes each week and vigorous physical activity up to 300 minutes each week or a combination of both.

**CHILDREN AND ADOLESCENTS**
(6 to 18 years)
Children and adolescents should do at least 60 minutes of moderate physical activity each day. Most of the 60 minutes should be aerobic activity. Physical activity that includes a moderate to vigorous intensity aerobic activity is recommended. Children and adolescents should include muscle-strengthening activities, like dancing, at least 3 days a week and bone-strengthening activities like jumping or dancing at least 3 days a week. Physical activities for children and adolescents should be developmentally appropriate, fun, and often vary.

**YOUNG CHILDREN**
(< 5 years)
There are no specific recommendations for the number of minutes young children should be active each day. Children under 2 years should play actively several times each day. Their activity may be interrupted due to short bursts of time, and not be at the same time. Physical activities for young children should be developmentally appropriate, fun, and develop variety.

Physical activity is generally safe for everyone. The health benefits you gain from being active are far greater than the chances of getting hurt. Here are some things you can do to stay safe while you are active:
- Ask your health care provider before starting to exercise if you have a health problem.
- Choose activities that are appropriate for your fitness level.
- Build up the time you spend before switching to activities that take more effort.
- Use the right safety gear and sports equipment.
- Choose a safe place to do your activity.
- Set a health care provider if you have a health problem.

Source: choosemyplate.gov

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Main task question:
Your class has been asked to design the new fitness center at school. The fitness center is 30 feet long by 30 feet wide and has an area of 900 square feet. Decide which fitness equipment to put in the fitness center and where to place each piece of equipment. Be sure to leave space for people to walk around and to include a door.

<table>
<thead>
<tr>
<th>Fitness Equipment</th>
<th>Dimensions</th>
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<tbody>
<tr>
<td>Treadmill</td>
<td>5 feet long by 3 feet wide</td>
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<tr>
<td>Elliptical</td>
<td>4 feet long by 2 feet wide</td>
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<tr>
<td>Stationary Bike</td>
<td>3 feet long by 2 feet wide</td>
</tr>
<tr>
<td>Bike</td>
<td>3 feet long by 3 feet wide</td>
</tr>
<tr>
<td>Weight bench</td>
<td>4 feet long by 3 feet wide</td>
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</tbody>
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**Task Debrief:**

1. How did you decide what the problem was asking you to find?
2. How do the length and width of the pieces of equipment help us determine its area?
3. When designing the arrangement, what pieces should be near each other and why?
4. How much room did you leave for people to walk around in the fitness center?
5. Does the placement of the equipment make sense in relation to where your door is?
6. How much floor space (area) is left after all the pieces of equipment has been placed?
7. How does moving the equipment to a different place affect the area in the fitness center?
8. How could you prove your solution makes sense?
9. Could you prove your strategy makes sense by solving the problem in another way?
10. What are the dimensions of this shape?

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11. How does the length and width of the rectangle determine its area?
Big Idea of Lesson: