Shelves

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Pete is making a bookcase for his books and other stuff.

He already has plenty of bricks and can get planks of wood for $2.50 each.

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For each shelf, Pete will put three bricks at each end then put a plank of wood on top. The diagram shows three shelves.

1. Pete wants five shelves in his bookcase.
   a. How many planks of wood does he need?
      5
   b. How many bricks does he need?
      30
   c. How high will the shelves be? 9 inches apart
      50 inches high
   d. How much will the bookcase cost?
      $12.50
The diagram below shows graphs with the following descriptions:

Description One: The cost of the bookcase against the number of shelves.
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\[ y = 48, \quad y = 10x, \quad y = 6x, \quad y = 2.5x \]

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\[
\begin{align*}
\text{Inches} & = \frac{1}{\text{in.}} \cdot 9 \quad \frac{3}{\text{in.}} \cdot 27 \quad \frac{5}{\text{in.}} \cdot 45 \\
& \times \frac{2}{\text{in.}} \cdot 18 \quad \frac{4}{\text{in.}} \cdot 3.6 \quad \times 0 \\
\text{Total} & = \$12.50 \quad \checkmark \quad 1
\end{align*}
\]
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   c. How high will the shelves be?
   d. How much will the bookcase cost?

\[\text{5 planks of wood} \times 3 \text{ bricks} \times 3 \text{ shelves} = 45 \text{ bricks} \times 3 \text{ shelves} = 135 \text{ bricks} \times 5 \text{ shelves} = 675 \text{ bricks}\]

\[\text{Cost} = 675 \text{ bricks} \times $2.50 = $1687.50\]
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\[
\begin{align*}
5 & / \ 1 \\
3.5 \times 0 & = 0 \\
50 \ \text{i.n.} & = 1 \\
12.5 \times 0 & = 0
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   a. How many planks of wood does he need?
      \[3 \times 5 = 15\]
   b. How many bricks does he need?
      \[5 \times 15 = 75\]
   c. How high will the shelves be?
      \[2.5 \times 5 = 12.5\]
   d. How much will the bookcase cost?
      \[\$12.50\]
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   b. How many bricks does he need? __30 bricks__
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   d. How much will the bookcase cost? __$12.50__
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\[ y = 10x, \quad y = 2.5x, \quad y = 4x, \quad y = 10x \]

2. Complete this table to match each graph with its description and its equation.

<table>
<thead>
<tr>
<th>Graph letter</th>
<th>Description number</th>
<th>Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>( y = 10x )</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>( y = 6x )</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>( y = 4.5 )</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>( y = 2.5x )</td>
</tr>
</tbody>
</table>
Shelves

This problem gives you the chance to:
• solve problems in a spatial context
• identify and distinguish the four point graphs related to this situation

Pete is making a bookcase for his books and other stuff.

He already has plenty of bricks and can get planks of wood for $2.50 each.

Each plank of wood measures 1 inch by 9 inches by 48 inches. Each brick measures 3 inches by 4.5 inches by 9 inches.

For each shelf, Pete will put three bricks at each end then put a plank of wood on top. The diagram shows three shelves.

1. Pete wants five shelves in his bookcase.
   a. How many planks of wood does he need?
   b. How many bricks does he need?
   c. How high will the shelves be?
   d. How much will the bookcase cost?
The diagram below shows graphs with the following descriptions:

Description One: The cost of the bookcase against the number of shelves.

Description Two: The number of bricks against the number of shelves.

Description Three: The height of the bookcase against the number of shelves.

Description Four: The width of the bookcase against the number of shelves.

The equations of the graphs are

\[ y = 48, \quad y = 10x, \quad y = 6x, \quad y = 2.5x \]

2. Complete this table to match each graph with its description and its equation.

<table>
<thead>
<tr>
<th>Graph letter</th>
<th>Description number</th>
<th>Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>( y = 10x )</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>( y = \frac{1}{2}x )</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>( y = 2x )</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td>( y = 2.5x )</td>
</tr>
</tbody>
</table>