

Tennessee Comprehensive Assessment Program

TCAP/CRA 2013



6

Task 1

Mall Task

Scoring Guide

Task 1. Mall Task

Belinda is the property manager at a mall. She designed a scaled map to be displayed in the center of the mall so that customers can find the different stores in the mall.

The scaled map shows the distance from the mall offices to the food court to be 9 inches. Belinda knows that the actual distance is 350 feet. She also knows that the scale on the map is 3 inches = 40 yards.

Belinda remembers the following facts about distances:

12 inches = 1 foot

3 feet = 1 yard

Belinda thinks the map may not be drawn accurately. Use ratios and equations to explain why you agree or disagree with Belinda.



1. Mall Task Scoring Guide

The CCSS for Mathematical Content (3 points)

6.RP.A.1 Uses a ratio and/or ratio language that accurately describes the situation when responding to the problem. _____

(1 Point)

6.RP.A.3d Uses rate reasoning to convert measurement units with given or known conversion rates. _____

(1 Point)

6.RP.A.3b Uses ratio and rate reasoning in determining if the map is drawn accurately by using the given scale. _____

(1 Point)

Total Content Points _____

The CCSS for Mathematical Practice (2 points)

MP3 Agrees or disagrees with Belinda, and provides appropriate calculations and reasoning to support the conclusion. Student may agree because 350 feet is appropriately represented by 8.75 inches, which rounds to 9 inches. _____

(1 Point)

(MP3: Construct viable arguments and critique the reasoning of others.)

MP4 Uses ratios or equations to make scale conversions and/or unit conversions of scale measurements. _____

(1 Point)

(MP4: Model with mathematics.)

Total Practice Points _____

Total Awarded Points _____

The CCSS for Mathematical Content Addressed in This Task

Understand ratio concepts and use ratio reasoning to solve problems.

- 6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”
- 6.RP.A.3b Solve unit rate problems, including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
- 6.RP.A.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

The CCSS for Mathematical Practice*

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

*Gray text indicates Mathematical Practices that are not addressed in this task.

Students’ responses to a mathematical task provide evidence of what they understand and are able to do in relation to the standards and practices. Across tasks, this cumulative evidence shows students’ understanding and abilities within a domain. When students do not respond completely to all parts of a task, they provide insufficient evidence of their mathematical understanding and abilities and therefore do not fully demonstrate the expectations of the standards and practices aligned with that task.

A-1a

Task 1. Mall Task

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Belinda remembers the following facts about distances:

12 inches = 1 foot

3 feet = 1 yard

Belinda thinks the map may not be drawn accurately. Use ratios and equations to explain why you agree or disagree with Belinda.

<p>Model</p> <p>3 in = 40 yd 3 ft = 1 yd.</p>	<p>Equations</p> <p>$\frac{350 \text{ ft}}{120 \text{ in}} = \frac{360 \text{ ft}}{120 \text{ yd}}$ ← Real / Scaled Life / Map</p> <p>$(40 \cdot 3) \cdot 3 = 5$ $5 = 350$ ↑ should equal</p> <p>← Problem</p>
<p>Solve</p> <p>$(40 \cdot 3) \cdot 3 = 5 \quad 5 = 350$ $(120) \cdot 3 = 5$ $360 = 5$ $5 = 360 \text{ not } 5 = 350$</p> <p>I agree</p>	<p>Explain</p> <p>I agree with Belinda because the scale map shows 360 ft not 350 ft. I found that out by doing $40 \cdot 3 = 120$ then $120 \cdot 3 = 360$ also $\frac{350}{360}$ and that is an incorrect ratio. Comparing real life to the scaled map.</p>

Anchor 1

Litho 637898

Total Content Points: 3 (6.RP.A.1, 6.RP.A.3d, 6.RP.A.3b)

Total Practice Points: 2 (MP3, MP4)

In this response, the student writes and compares two ratios to describe the situation with the

mall map $\left(\frac{350 \text{ ft}}{117 \text{ yd}} \mid \frac{360 \text{ ft}}{120 \text{ yd}} \right)$ (6.RP.A.1). The student uses rate reasoning to convert

measurement units by showing in the section marked “Model” a distance of 120 yards, which is converted to 360 feet in the “Solve” section $((40 \cdot 3)3 = s, (120)3 = s, 360 = s)$ (6.RP.A.3d). The student then shows that the map is not drawn accurately by the given scale (“ $s = 360$ not $s = 350$ ”) (6.RP.A.3b). The student agrees with Belinda and provides appropriate calculations and reasoning to support this conclusion in the “Explain” section (MP3). The student also uses these calculations to make scale and unit conversions of scale measurements $(40 \cdot 3 = 120, 120 \cdot 3 = 360)$ (MP4).

Total Awarded Points: 5 out of 5

Task 1. Mall Task

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The scaled map shows the distance from the mall offices to the food court to be 9 inches. Belinda knows that the actual distance is 350 feet. She also knows that the scale on the map is 3 inches = 40 yards.

Belinda remembers the following facts about distances:

12 inches = 1 foot

3 feet = 1 yard

Belinda thinks the map may not be drawn accurately. Use ratios and equations to explain why you agree or disagree with Belinda.

$\frac{9 \text{ in}}{350 \text{ ft}}$

$\frac{9 \text{ in}}{116.6 \text{ yd}} \quad \frac{3 \text{ in}}{40 \text{ yd}}$

$9 \text{ in} = 116.6 \text{ yd}$

$$\begin{array}{r} 3 \overline{) 350} \\ \underline{-36} \\ 05 \\ \underline{-3} \\ 20 \\ \underline{-18} \\ 2 \end{array}$$

$$\begin{array}{r} 2.91 \\ 40 \overline{) 116.6} \\ \underline{-80} \\ 366 \\ \underline{-360} \\ 60 \\ \underline{-40} \\ 20 \end{array}$$

I agree because if you turn the amount of distance there is between the offices and the food court in yards and make proportion you'd see that $9 \div 3$ is 3 so you would have to divide 116.6 yd by 3 to get the 40 but it equates 38.86 instead. So it was incorrect.

Anchor 2

Litho 643418

Total Content Points: 3 (6.RP.A.1, 6 RP.A.3d, 6.RP.A.3b)

Total Practice Points: 2 (MP3, MP4)

In this response, the student uses ratios to describe the situation with the mall map

$\left(\frac{9 \text{ in}}{350 \text{ ft}}, \frac{9 \text{ in}}{116.6 \text{ yd}} \right)$ (6.RP.A.1). The student uses rate reasoning to convert measurement units

$(350 \div 3 = 116.6 \text{ yd})$ (6.RP.A.3d) and to determine that the mall map was not drawn accurately (“divide 116.6 yd by 3 to get the 40 but it equates 38.86 instead”) (6.RP.A.3b). This reasoning also provides adequate support for agreement with Belinda (MP3). The student uses equations to make unit conversions of scale measurements (e.g., $350 \div 3 = 116.6 \text{ yd}$) (MP4).

Total Awarded Points: 5 out of 5

Task 1. Mall Task

Belinda is the property manager at a mall. She designed a scaled map to be displayed in the center of the mall so that customers can find the different stores in the mall.

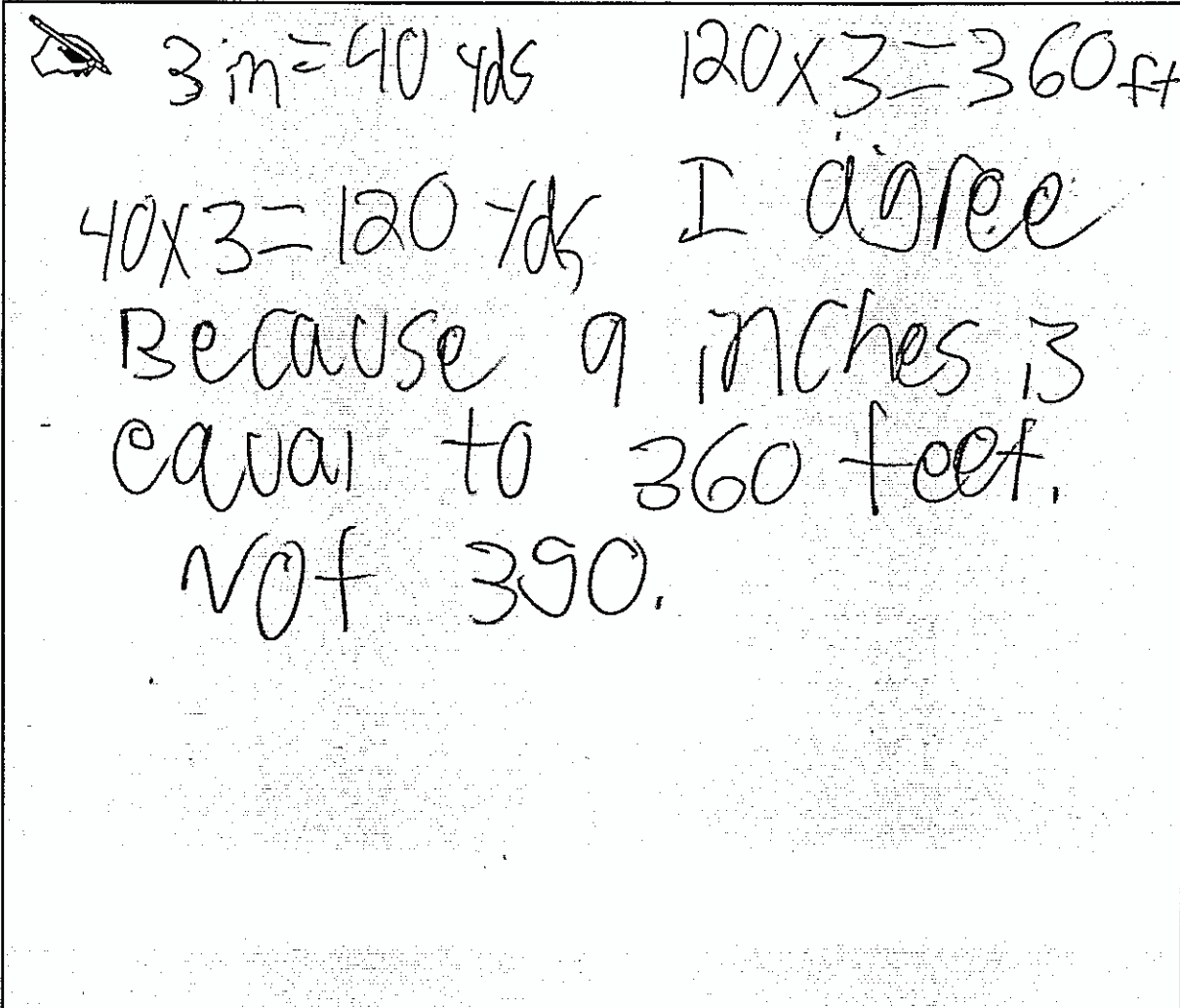
The scaled map shows the distance from the mall offices to the food court to be 9 inches. Belinda knows that the actual distance is 350 feet. She also knows that the scale on the map is 3 inches = 40 yards.

Belinda remembers the following facts about distances:

12 inches = 1 foot

3 feet = 1 yard

Belinda thinks the map may not be drawn accurately. Use ratios and equations to explain why you agree or disagree with Belinda.



 $3 \text{ in} = 40 \text{ yds}$ $120 \times 3 = 360 \text{ ft}$

 $40 \times 3 = 120 \text{ yds}$ I disagree

 Because 9 inches is

 equal to 360 feet,

 not 390.

Anchor 3 Litho 641153

Total Content Points: 2 (6.RP.A.3d, 6.RP.A.3b)

Total Practice Points: 2 (MP3, MP4)

In this response, the student does not use ratios or ratio language to address the situation with the mall map (no credit for 6.RP.A.1). The student shows rate reasoning by converting measurement units using conversion rates ($3 \text{ in} = 40 \text{ yds}$, $40 \times 3 = 120 \text{ yds}$, $120 \times 3 = 360 \text{ ft}$) (6.RP.A.3d). The student uses this measurement conversion to argue that the map is not drawn accurately (“equal to 360 feet, not 350”) (6.RP.A.3b). The student agrees with Belinda and provides appropriate calculations and reasoning to support this conclusion (MP3). The student does use equations to model the scale conversions ($120 \times 3 = 360 \text{ ft}$) (MP4).

Total Awarded Points: 4 out of 5

A-4a

Task 1. Mall Task

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The scaled map shows the distance from the mall offices to the food court to be 9 inches.


Belinda knows that the actual distance is 350 feet. She also knows that the scale on the map is 3 inches = 40 yards.

Belinda remembers the following facts about distances:

12 inches = 1 foot

3 feet = 1 yard

Belinda thinks the map may not be drawn accurately. Use ratios and equations to explain why you agree or disagree with Belinda.



9 in = 3
350 ft

3 in equals 40 yards
3 in = 40
9 in = 40 x 3 = 120

So the map isn't drawn correctly
there is a big difference

12 in | 350 ft

- 24

110

29 in = 386
3 in = 40 ft

So still the eniqall it
is to draw

RP1 - 1
RP3d - 0
RP3b - 1
MP3 - 0
MP4 - 1
scale
m

3

Anchor 4

Litho 654755

Total Content Points: 2 (6.RP.A.1, 6.RP.A.3b)

Total Practice Points: 1 (MP4)

In this response, the student writes a ratio $\left(\frac{9}{350}\right)$ to describe the mall situation (6.RP.A.1). The student does not use rate reasoning to convert measurement units (no credit for 6.RP.A.3d). However, the student does use rate reasoning (3 in = 40, 9 in = 40 x 3 = 120) as a first step in determining if the map is drawn accurately (6.RP.3b) and this use of equations to make a scale conversion is also sufficient to demonstrate modeling (MP4). The student states that “the map isn’t drawn correctly” but does not provide appropriate reasoning or calculations to support the conclusion (no credit for MP3).

Total Awarded Points: 3 out of 5

Task 1. Mall Task

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Belinda remembers the following facts about distances:

12 inches = 1 foot

3 feet = 1 yard

Belinda thinks the map may not be drawn accurately. Use ratios and equations to explain why you agree or disagree with Belinda.

 I disagree with Belinda because 3 in. does not equal 40 yards.

$$\frac{3}{x} = \frac{9}{350}$$

$$\frac{1050}{9} = \frac{9}{9}x \quad x = 116.6$$

first, I put 3 over x and 9 over 350 I crossed multiplied and got 1050. for my answer I put $9x$ I divided 9 on both sides and $x = 116.6$.

Anchor 5

Litho 688281

Total Content Points: 2 (6.RP.A.1, 6.RP.A.3b)

Total Practice Points: 1 (MP4)

In this response, the student writes a ratio to describe the mall map situation $\left(\frac{9}{350}\right)$ (6.RP.A.1).

The student does not use rate reasoning to convert measurement units with given conversion rates (no credit for 6.RP.A.3d). The student does show ratio reasoning in determining if the map

is accurate $\left(\frac{3}{x} = \frac{9}{350} \dots 116.6\right)$, although the work is not labeled (6.RP.A.3b). The student

disagrees with Belinda but states only that three inches does not equal 40 yards without any calculations or reasoning to support this conclusion (no credit for MP3). The student writes ratios

in order to make unit conversions $\left(\frac{3}{x} = \frac{9}{350}, \frac{1050}{9} = \frac{9x}{9}, x = 116.6\right)$ (MP4).

Total Awarded Points: 3 out of 5

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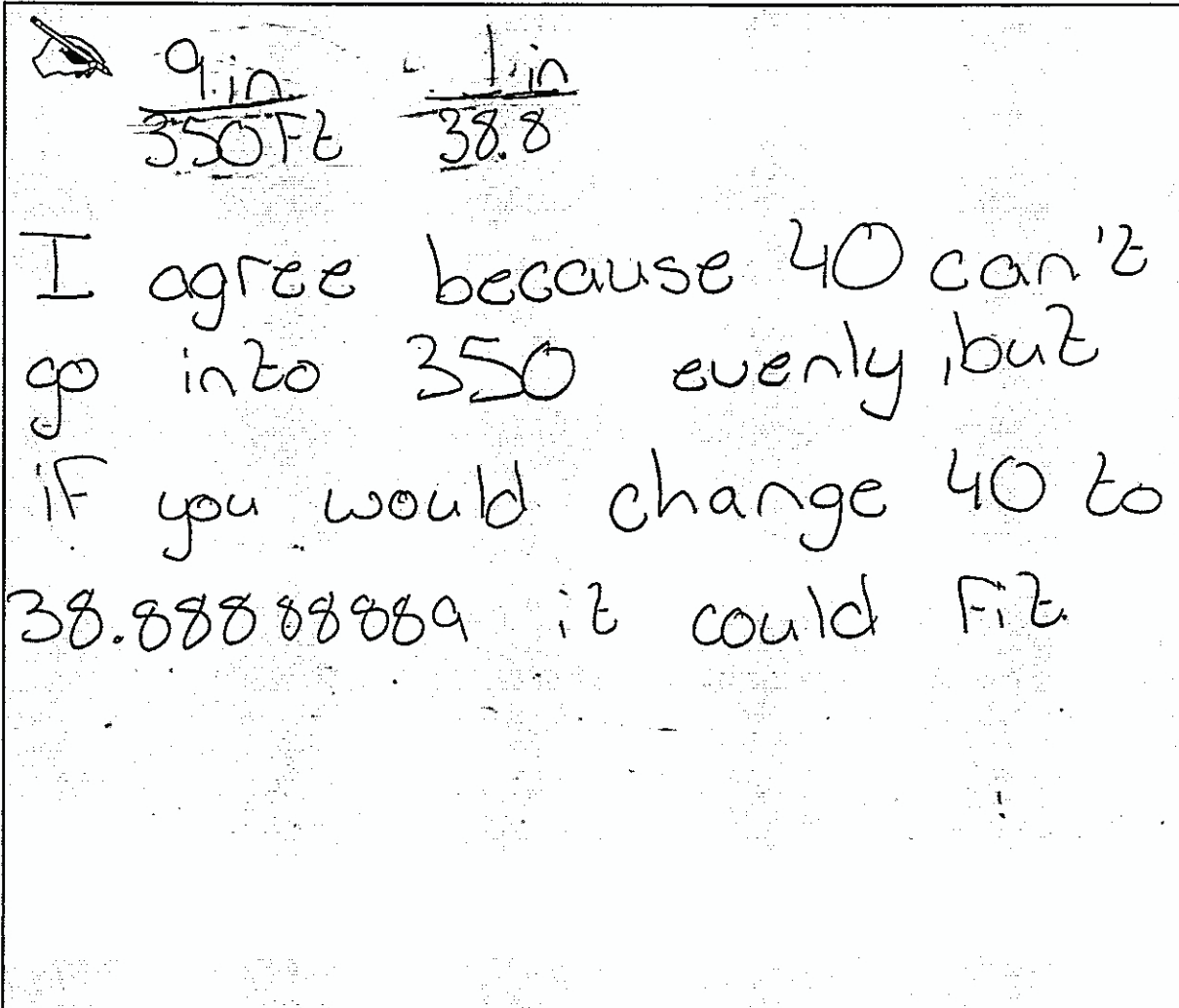
The scaled map shows the distance from the mall offices to the food court to be 9 inches. Belinda knows that the actual distance is 350 feet. She also knows that the scale on the map is 3 inches = 40 yards.

Belinda remembers the following facts about distances:

12 inches = 1 foot

3 feet = 1 yard

Belinda thinks the map may not be drawn accurately. Use ratios and equations to explain why you agree or disagree with Belinda.



$$\frac{9 \text{ in}}{350 \text{ FE}} = \frac{1 \text{ in}}{38.8}$$

I agree because 40 can't go into 350 evenly, but if you would change 40 to 38.888888889 it could fit.

Anchor 6

Litho 644695

Total Content Points: 2 (6.RP.A.1, 6.RP.A.3b)

Total Practice Points: 0

In this response, the student does write and compare two ratios to describe the mall map situation

$\left(\frac{9 \text{ in}}{350 \text{ ft}}; \frac{1 \text{ in}}{38.8}\right)$ (6.RP.A.1). The student does not use rate reasoning to convert measurement

units (no credit for 6.RP.A.3d). The student does show ratio reasoning to determine if the map is

drawn accurately $\left(\frac{9 \text{ in}}{350 \text{ ft}}; \frac{1 \text{ in}}{38.8}\right)$; (“40 can’t go into 350 evenly, but . . . 38.88 . . . could”)

(6.RP.A.3b). The student does not support agreement with Belinda with a clear explanation or calculations (no credit for MP3). The student does not clearly use ratios or equations to make scale or unit conversions (no credit for MP4).

Total Awarded Points: 2 out of 5

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Belinda remembers the following facts about distances:

12 inches = 1 foot

3 feet = 1 yard

Belinda thinks the map may not be drawn accurately. Use ratios and equations to explain why you agree or disagree with Belinda.

The student's work is contained within a hand-drawn rectangular border. At the top left, there is a small drawing of a hand holding a pencil. To its right, the ratio $3:40$ is written. Below this, a box contains the text "40 yards on the map". To the right of this box is another box labeled "actual 40 yards". Further right, the ratio $9:350$ is written. Below it, a box is labeled "shown distance" and another box is labeled "actual distance from food court". To the right of these boxes is a hand-drawn map of a rectangular area. Inside the map, a circle is labeled "food court". A dashed line extends from the right edge of the map towards the food court, with the label "9 in" written next to it. Below the map, the student has written the equation $9:3 = 3 \times 40 = 120$. To the left of this, the ratio $40:3 = 13.33$ is written. Below that, a multiplication problem is shown: $480 \text{ in} \times 3 = 1440$. To the right of the multiplication problem, the student has written a paragraph: "I agree that the map is not accurate because for every 3 inches it's 40 yards and that equals to be a bit bigger than 350 ft."

Anchor 7 Litho 639437

Total Content Points: 1 (6.RP.A.1)

Total Practice Points: 1 (MP3)

In this response, the student does write and compare two ratios to describe the mall map situation (3:40, 9:350) (6.RP.A.1). The student does not use rate reasoning to convert any measurements (no credit for 6.RP.A.3d) and does not use ratio and rate reasoning to determine if the map is drawn accurately (no credit for 6.RP.A.3b). The student agrees that the map is not accurate and provides just enough reasoning to support this conclusion (“for every 3 inches it’s 40 yards and that equals to be a lot bigger [than] 350 ft”) (MP3). The student does not use ratios or equations to make scale or unit conversions (no credit for MP4).

Total Points Awarded: 2 out of 5

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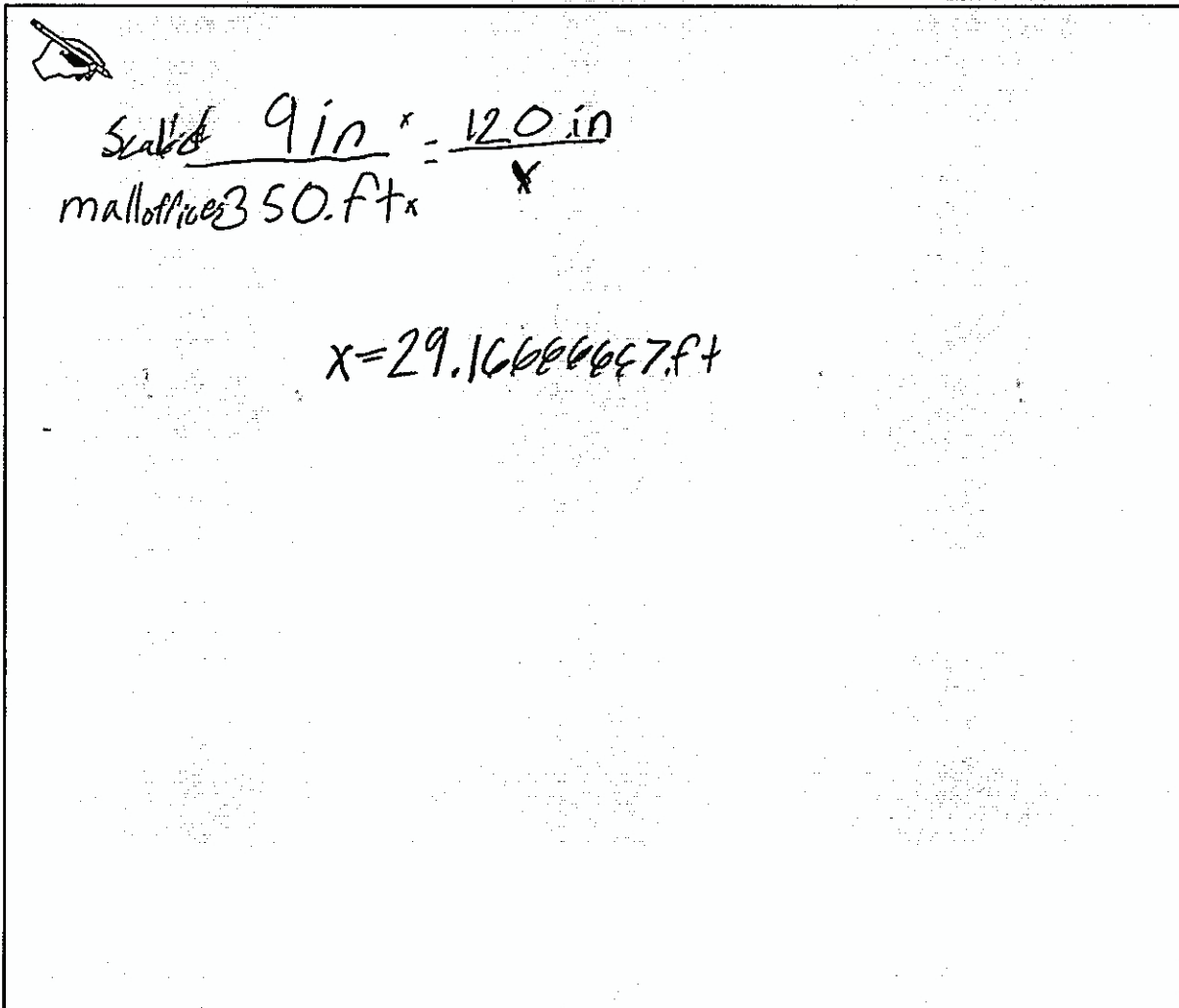
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Belinda thinks the map may not be drawn accurately. Use ratios and equations to explain why you agree or disagree with Belinda.





 scaled $\frac{9 \text{ in}}{350 \text{ ft}}$ = $\frac{120 \text{ in}}{x}$

 $x = 29.1666667 \text{ ft}$

Anchor 8

Litho 646357

Total Content Points: 1 (6.RP.A.1)

Total Practice Points: 0

In this response, the student writes one ratio that accurately describes the mall map situation

$\left(\frac{9 \text{ in}}{350 \text{ ft}}\right)$ (6.RP.A.1). The student does not use rate reasoning to convert measurement units

(no credit for 6.RP.A.3d). The student does not use ratio and rate reasoning to determine if the map is drawn accurately (no credit for 6.RP.A.3b). The student does not agree or disagree with Belinda (no credit for MP3), and does not use ratios or equations to make scale or unit conversions (no credit for MP4).

Total Awarded Points: 1 out of 5

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Belinda remembers the following facts about distances:

12 inches = 1 foot

3 feet = 1 yard

Belinda thinks the map may not be drawn accurately. Use ratios and equations to explain why you agree or disagree with Belinda.

 agree because it's not the actual distance. if on the map its only 9 inches but in real life its actually 350 feet.

3 inches = 40 yards

mall offices to food court = 9 inches

$40 \times 9 = 120$

Agree

Anchor 9

Litho 646807

Total Content Points: 0

Total Practice Points: 0

In this response, the student does not use a ratio or ratio language to describe the mall map situation (no credit for 6.RP.A.1). The student does not use rate reasoning to convert measurement units (no credit for 6.RP.A.3d). The student does not use ratio and rate reasoning to determine if the map is drawn accurately (no credit for 6.RP.A.3b). The student agrees with Belinda but does not support the conclusion with appropriate calculations and reasoning (no credit for MP3). The student does not use ratios or equations to make scale or unit conversions (no credit for MP4).

Total Awarded Points: 0 out of 5