**7.RP Music Companies, Variation 2**

Alignments to Content Standards: 7.RP.A.3

**Task**

BeatStreet, TunesTown, and MusicMind are music companies. BeatStreet and MusicMind are teaming up together to make an offer to acquire 1.5 million shares of TunesTown worth $3 per share. They will offer TunesTown 20 million shares of BeatStreet worth $25 per share. To make the swap even, they will offer another 2 million shares of MusicMind.

What price per share (in dollars) must each of these additional shares be worth?

**IM Commentary**

This problem has multiple steps. In order to solve the problem it is necessary to compute:

- the value of the TunesTown shares;
- the total value of the BeatStreet offer of 20 million shares at $25 per share;
- the difference between these two amounts; and
- the cost per share of each of the extra 2 million shares MusicMind offers to equal to the difference.

See "7.RP Music Companies, Variation 1" for a task with a very similar setup that focuses on comparing unit rates so illustrates 7.RP.2.

Teachers should be aware that the context of stock purchase may not be familiar to 7th graders. The context should be explained to students if needed.
Solutions

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Solution: Step-by-step computing

The value of the TunesTown shares is 1.5 million times $374, or $561 million, i.e.

\[
\frac{374 \text{ dollars}}{1 \text{ share}} \times 1.5 \text{ million shares} = 561 \text{ million dollars}.
\]

BeatStreet offers 20 million shares at $25 per share. This is worth

\[
20,000,000 \text{ shares} \times \frac{25 \text{ dollars}}{1 \text{ share}} = 500,000,000 \text{ dollars}
\]

MusicMind still needs to offer $561 million minus $500 million, i.e. $61 million. They want this to be 2 million shares, and the unit cost must be:

\[
\frac{61,000,000 \text{ dollars}}{2,000,000 \text{ shares}} = \frac{30.5 \text{ dollars}}{1 \text{ share}}
\]

So each of the additional shares must be worth $30.50 per share in order to make an even swap.

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Solution: Set up an equation

Set up an equation:

\[
\frac{374 \text{ dollars}}{1 \text{ share}} \cdot 1,500,000 \text{ shares} = 20,000,000 \text{ shares} \cdot \frac{25 \text{ dollars}}{1 \text{ share}} + 2,000,000 \text{ shares}
\]

Cancel the share units and divide by the dollar units to get:

\[
374 \cdot 1,500,000 = 20,000,000 \cdot 25 + 2,000,000 \cdot x.
\]

Solving for \(x\):
\[ x = \frac{374 \cdot 1,500,000 - 20,000,000 \cdot 25}{2,000,000} = 30.5. \]

There are no units for \( x \) because it is the NUMBER of dollars per share.