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## (1) Running Laps

Sue and Julie were running equally fast around a track. Sue started first. When Sue had run nine laps, Julie had run three laps. When Julie had completed 15 laps, how many laps had Sue run?

Thompson, C.S. & Bush, W.S. (2003). Improving middle school teachers' reasoning about proportional reasoning. Mathematics Teaching in the Middle School, 8(8), 398-403.

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## (2) Father Christmas

Bart is a publicity painter. In the last few days, he had to paint Christmas decorations on several store windows. Yesterday, he made a drawing of a 56 cm high Father Christmas on the door of the bakery. He needed 6 ml of paint. Now he is asked to make an enlarged version of the same drawing on a supermarket window. This copy should be 168 cm high. Approximately how much paint will Bart need to do this?

Bakery's door Supermarket window

Van Dooren, De Bock, Verschaffel, & Janssens (2003). Improper applications of proportional reasoning. Mathematics Teaching in the Middle School, 9(4), 204-209.

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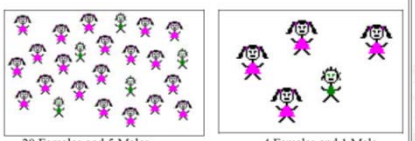
## (3) Hospital

Suppose that two hospitals kept track of the number of babies born each week. Hospital A is in a big city while Hospital B is in a small town.



20 Females and 5 Males
Hospital A

4 Females and 1 Male
Hospital B

Assuming that for any given birth it is equally likely for a boy or girl to be born, which do you think is more likely to occur?

a) 20 out of 25 of the babies born in Hospital A are female,
b) 4 out of 5 of the babies born in Hospital B are female,
or
c) Events a) and b) are equally likely to occur.

Stohl, H. (2002). Using proportional reasoning appropriately: Lessons learned through probability. Unpublished manuscript

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## (4) Garden Plot

- The Science Club has four separate rectangular plots for experiments with plants:
  - 1 foot by 4 feet
  - 7 feet by 10 feet
  - 17 feet by 20 feet
  - 27 feet by 30 feet
- Which rectangle is most square?
  - A. 1 ft by 4 ft
  - B. 7 ft by 10 ft
  - C. 17 ft by 20 ft
  - D. 27 ft by 30 ft

Bright, G. W., Jowner, J. M. & Wallis, C. (2003). Assessing proportional thinking, Mathematics Teaching in the Middle School, 9(3), 166-172.

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## (5) Container

I have 3 different-sized cylindrical containers, all of which hold exactly the same amount of liquid when completely full. Container A is 5 cm high and has a base area of 40 $cm^2$. Container B is 10 cm high. What is the base area of Container B? Explain your thinking

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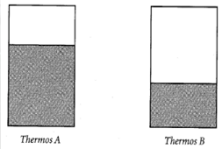
## (6) Cocoa

Thermos A and Thermos B contain cocoa that tastes the same. If one scoop of cocoa mix is added to both Thermos A and Thermos B, which thermos contains the cocoa with the stronger chocolate taste? Explain your answer.



Thermos A Thermos B

Billings, E. M. H. (2001). Problems that encourage proportion sense. Mathematics Teaching in the Middle School, 7(1), 10-14.