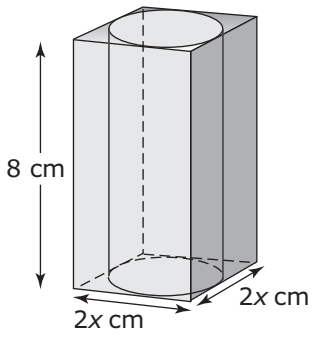
Name: _____ Date: _____

MathLinks 9 Option 1
Final Exam Written Response

Write your response in the space provided. Present your response in a well-organized way, using complete sentences and correct units.

Use this information to answer #1.

The volume of the rectangular glass prism is 288 cm^3.



1. a) Write an expression for the volume of the rectangular box in terms of x. Show your thinking. **Hint:** $V = lwh$.

b) Use the given volume of the prism to determine the value of x and the dimensions of the rectangular right prism.

c) Calculate the surface area of the right cylinder. Justify your work mathematically. Express your answer to the nearest tenth of a centimetre. **Hint:** $SA = 2\pi r^2 + 2\pi rh$.

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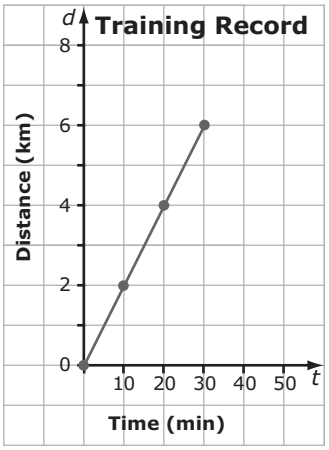
Use this information to answer #2.

Jeanine is training for her first 10-km run. The graph shows her times after two weeks of training.



2. a) Jeanine tells Max that she can extrapolate to determine the time it would take to run 5 km. Is she correct? Explain.

b) Determine the time it would take for Jeanine to run 5 km.

c) Write an equation to represent her distance at any time, t.

d) Jeanine's goal is to complete the 10-km run in less than 50 min. At her current rate, will she achieve her goal? Justify your work mathematically.

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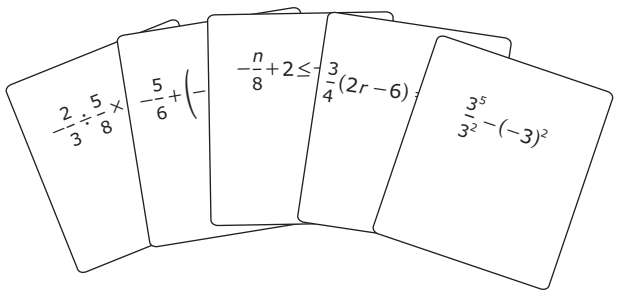
Use this information to answer #3.

A card game that you are playing with a partner involves drawing cards containing a mathematical expression or an equation from a deck of cards. The object of the game is to solve the expressions or equations on your cards before your partner does.

Your draw the cards shown.



3. a) Describe the order for solving $-\frac{2}{3} \div \frac{5}{8} \times \left(-\frac{4}{5}\right)$.

b) Determine the solution for $-\frac{5}{6} + \left(-\frac{2}{3}\right) \div \frac{3}{4}$. Show your work.

c) Graph the solution to $-\frac{n}{8} + 2 \leq -7$.

d) Solve $\frac{3}{4}(2r - 6) = \frac{1}{5}(36 + r)$.

e) Simplify and evaluate $\frac{3^5}{3^2} - (-3)^2$.

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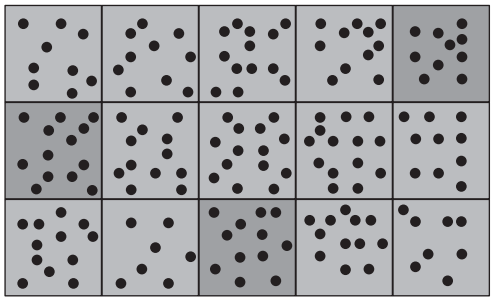
Use this information to answer #4.

The image shows data about a gathering area for spectators at a local sporting event. This area was created to accommodate 195 people comfortably. It is important to the event planners that there is enough space for the spectators to spread out. The planners photographed the area periodically during the day of an event in order to monitor the volume of spectators. They divided the images into 15 equal squares. Each dot on the image represents a spectator.



4. a) If a spectator can go to any square in the gathering area, what is the theoretical probability of a spectator choosing any square? Explain your thinking.

b) The event planners want to know if the spectators are overcrowding any part of the gathering area. **Hint:** A square that has more than the average number of people on a square is overcrowded.

- Using the image provided, describe the method you will use to collect the necessary data.
- Identify any samples or population you will use.
- Carry out your method.
- Analyze your results and draw conclusions.