Opening a Fitness Club

You and a friend are planning to open a new fitness club. You have researched two clubs that offer the services you would like to provide. These clubs offer the following membership plans if you join for a year:

Workout Club
one month free,
then $35 per month

Get Fit Club
initial fee of $200,
then $25 per month

1. Develop a membership plan that will make the fees for your club competitive. The plan should attract members and generate more income than at least one of the other club plans.

  a) What is your plan?

  b) Explain how your plan will attract members.

  c) Explain how your plan may result in earning more profit than the other clubs.

2. Suppose a potential member has $1000 to spend. Which club offers the best deal? Show your work.

Suggested Timing
40–50 minutes

Materials
• grid paper
• ruler

Blackline Masters
• Master 1 Project Rubric
• Master 9 0.5 Centimetre Grid paper

Mathematical Processes
☑ Communication (C)
☑ Connections (CN)
☑ Mental Mathematics and Estimation (ME)
☑ Problem Solving (PS)
☑ Reasoning (R)
☑ Technology (T)
☑ Visualization (V)

Specific Outcomes
PR1 Generalize a pattern arising from a problem-solving context using linear equations and verify by substitution.
PR2 Graph linear relations, analyze the graph and interpolate or extrapolate to solve problems.

Planning Notes: Opening a Fitness Club

You may wish to use the following steps to introduce and complete this Challenge:

1. Introduce the Challenge by discussing fitness clubs and their pricing structures. Ask:
- What fitness or workout clubs are you familiar with?
- What membership plans do they offer? What are the fees for each?
- Why do fitness clubs have different membership plans?

2. After reading the Challenge with your students, ask:
- In your opinion, which club's membership plan is more attractive? Why?
- How could you mathematically justify your preference?
- What methods might you use to do this? (Students may mention using tables, equations, and graphs.) Make copies of **Master 9 0.5 Centimetre Grid Paper** available.
- What period of time might you use to compare prices? Why?

- What alternative membership-fee structure might you develop?
- How could you show that your membership plan will attract members or investors?

3. Clarify that the task is to
- develop a membership plan with a competitive fee structure
- explain how your membership-fee structure will attract members
- explain how your membership-fee structure will be more profitable than the one offered by at least one of the other two clubs
- evaluate which club offers the best deal to a potential member with $1000 to spend

4. Review the **Master 1 Project Rubric** with students so that they will know what is expected.

Meeting Student Needs

• Some students may need assistance in setting up a method to compare the membership fee structures. Discuss with students what method(s) they might use and coach them as they develop their choice of method.
• Some students may be more successful if they use spreadsheet software. Students can then generate graphs using the built-in features of the spreadsheet software program and compare the membership fee structures over various periods of time.

Gifted and Enrichment

• Challenge students to research the cost of membership plans for at least two fitness clubs in the community. Have them determine what services each club offers, develop a way to compare the membership plans, and then determine which club offers the best deal and explain why. Alternatively, students could research the following questions for each club and then compare fitness clubs:
  – Which membership plan (monthly, seasonal, or annual fees) offers the best deal?
  – What would be the total cost of membership for a period of three years?

This Challenge can be used for either Assessment *for* Learning or Assessment *of* Learning.

Assessment	Supporting Learning
Assessment *for* Learning	
Opening a Fitness Club Discuss the Challenge as a class. Have students provide individual responses.	• Consider allowing students to work with a partner and then write individual responses.
Assessment *of* Learning	
Opening a Fitness Club Introduce the Challenge to the class. Have students provide individual responses.	• **Master 1 Project Rubric** provides a holistic descriptor that will assist you in assessing student work on this Challenge. Page 342 provides notes on how to use this rubric for the Challenge. • To view student exemplars, go to www.mathlinks9.ca, access the Teacher Centre on the Online Learning Centre, go to Assessment, and then follow the links.

The chart below shows the **Master 1 Project Rubric** for tasks such as this Challenge, Opening a Fitness Club, and provides notes that specify how to identify the level of specific answers for this project.

Score/Level	Holistic Descriptor	Specific Question Notes
5 (Standard of Excellence)	❑ Applies/develops **thorough** strategies and mathematical processes making **significant** comparisons/connections that demonstrate a **comprehensive** understanding of how to develop a complete solution ❑ Procedures are **efficient and effective** and may contain a **minor mathematical error** that does not affect understanding ❑ Uses **significant** mathematical language to explain their understanding and provides **in-depth** support for their conclusion	• provides a complete and correct solution
4 (Above Acceptable)	❑ Applies/develops **thorough** strategies and mathematical processes for making **reasonable** comparisons/connections that demonstrate a **clear** understanding ❑ Procedures are **reasonable** and may contain a **minor mathematical error** that may hinder the understanding in one part of a complete solution ❑ Uses **appropriate** mathematical language to explain their understanding and provides **clear** support for their conclusion	Demonstrates one of the following: • provides a complete response with weak communication in one part of a question • provides a complete response with a minor calculation or interpretation error
3 (Meets Acceptable)	❑ Applies/develops **relevant** strategies and mathematical processes making **some** comparisons/connections that demonstrate a **basic** understanding ❑ Procedures are **basic** and may contain a **major error or omission** ❑ Uses **common** language to explain their understanding and provides **minimal** support for their conclusion	Demonstrates one of the following: • correctly completes #1 with good communication • provides a correct response to #1a) and 2
2 (Below Acceptable)	❑ Applies/develops **some relevant** mathematical processes making **minimal** comparisons/connections that lead to a **partial solution** ❑ Procedures are **basic** and may contain **several major mathematical errors** ❑ Communication is **weak**	Demonstrates one of the following: • correctly completes #1a) and b) or #1a) and c) • provides a correct response to #2 based on a comparison of only the two given clubs
1 (Beginning)	❑ Applies/develops an **initial start** that may be **partially correct** or could have led to a correct solution ❑ Communication is **weak or absent**	Demonstrates one of the following: • makes a correct start to one part of the problem • correctly completes #1a) but fails to go beyond this

For student exemplars, go to www.mathlinks9.ca and follow the links.