

Name:

Date:

SeaWeed Farm

(AS03/ME03/SR05)

On-Demand (Check One) Yes No

Dudley owns a beautiful underwater seaweed farm. After a series of disasters last growing season, Dudley decided to replant his entire farm.

Three different companies are available to plan the farm. Octo-Planters charges a flat fee of \$250,000 plus \$0.50 per plant fee. Eel Engineering charges a flat fee of \$100,000 plus \$0.65 per plant fee. Seahorse Planting charges a flat rate of \$500,000 plus \$3.00 per square meter planting fee. Dudley can plant a maximum of 12 plants per square meter.

1. Dudley wants to plant 12 seaweed plants per square meter. Write an equation to represent the cost for planting for each company. Be sure each equation uses the same variables to represent the same thing. Be sure to define all variables you use.

2. How many seaweed plants would have to be planted for Seahorse Planting and Octo-Planters to have the same cost? Show your work using words, numbers, and/or diagrams.

3. How many seaweed plants would have to be planted for Seahorse Planting and Eel Engineers to have the same cost? Show your work using words, numbers, and/or diagrams.

4. How many seaweed plants would have to be planted for Octo-Planters and Eel Engineers to have the same cost? Show your work using words, numbers, and/or diagrams.

Formulas for the Volume of a Cylinder	Formulas for the Area of a Circle
$V = \pi r^2 h$	$A = \pi r^2$

5. Dudley's circular seaweed farm has a diameter of 440 meters. Which company would be least expensive for Dudley to plant 12 plants per square meter in his farm? Be sure to determine the cost of planting his farm with that company. Show your work using words, numbers, and/or diagrams.

6. After meeting with the bank, Dudley decides to only spend \$536,000 to replant his farm. Which company will give him the greatest number of plants for \$536,000? Justify your choice using the number of plants he will be able to purchase.

7. The seaweed plants grow as a rate of 2 meter per day. Each seaweed plant is cut off at the sea floor every time the plant reaches the surface of the ocean. After a few cycles of growing and cutting, Dudley discovers that he is harvesting his seaweed every 39 days. What is the volume of seaweed Dudley harvests every 39 days? Remember the base of his farm is a circle with a diameter of 440 meters. Show your work using words, numbers, and/or diagrams.

