Math Activity: Saltwater Intrusion Predictions

Instruction: Use the graph of the saltwater intrusion for 1,500 foot aquifer to answer the following questions.

1. Use graph paper to trace the saltwater intrusion "tongue" graphic on. Find the area of the saltwater intrusion for each year.

Year	**Area (sq units)** of saltwater intrusion
1965	
1977	
1992	
2005	

2. Is the growth in the area of the saltwater intrusion linear? Explain why or why not. If it is linear, write a linear equation that illustrates the area of the saltwater intrusion.

3. Can the growth be illustrated as a function? Explain why or why not. If so, give the domain and range of the function.

4. Fill in the table about the changes from 1965 to 2005.

Years	What is the area growth between those years?	What is the percent growth between the two years?	Divide by the number of years
1965 – 1977			
1977 – 1992			
1992 – 2005			
1965 – 2005			

5. Describe the real world context of the last column above.

6. Make a prediction of the saltwater intrusion and support your prediction with numbers.

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SAMPLE ANSWER KEY

Instruction: Use the graph of the saltwater intrusion for 1,500 foot aquifer to answer the following questions.

7. Use graph paper to trace the saltwater intrusion "tongue" graphic on. Find the area of the saltwater intrusion for each year. *Answers are approximate and will vary depending on size of grid on graph paper.*

Year	**Area (sq units)** of saltwater intrusion
1965	7 sq units
1977	23 sq units
1992	49.5 sq units
2005	142.5 sq units

8. Is the growth in the area of the saltwater intrusion linear? Explain why or why not. If it is linear, write a linear equation that illustrates the area of the saltwater intrusion.
   No, it is not linear. The rate of change is not constant.
9. Can the growth be illustrated as a function? Explain why or why not. If so, give the domain and range of the function.
   Yes, it can be illustrated as a function because there is one output to any input. The domain is {1965, 1977, 1992, 2005} The range is {7, 23, 49.5, 142.5}

10. Fill in the table about the changes from 1965 to 2005.

Years	What is the area growth between those years?	What is the percent growth between the two years?	Divide by the number of years
1965 – 1977	16	229%	19
1977 – 1992	26.5	115%	7.7
1992 – 2005	93	188%	14.5
1965 – 2005	135.5	1936%	48.4

11. Describe the real world context of the last column above.
    The last column shows the percent of change per year from the initial year (not between each year)
12. Make a prediction of the saltwater intrusion and support your prediction with numbers.
    The saltwater intrusion is increasing at a faster rate each year. If it continues, saltwater intrusion will spread further north and more than double in value.

SALTWATER INTRUSION in "1,500 foot" aquifer