

Performance Task Item: Polynomials in the Garden

Task/Question 1:

A. Name the three operations polynomials are closed under:

B. Define polynomial:

C. Name by degree and by number of terms: $x^3 + 9x^2 - 14$:

Simplify each of the following expressions:

D. $(3x^2 + 4x - 5) + (6x + 5) =$ _____ $(7x^3 - 2) + (5x^3 - x - 3) =$ _____

$(x^2 + 5x + 7) - (x^2 - 2x + 4) =$ _____ $(8x + 12) - (5x^2 - 2x - 1) =$ _____

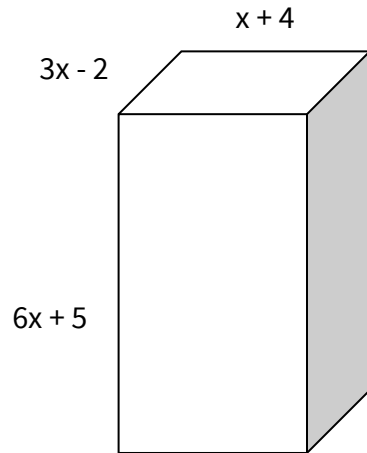
$(x - 6)(x + 9) =$ _____ $(2x - 5)(5x^2 + 4x + 7) =$ _____

E. The space station flies at an average altitude of 248 miles (400 kilometers) above Earth. It circles the globe every 90 minutes at a speed of about 17,500 mph (28,000 kph). NASA has hired William, an engineer, to redesign the solar panels to maximize their power making it circle every 80 minutes. The new rectangular panels will measure $x^2 + 2x - 3$ by $3x + 5$. What is the perimeter and area of each new panel?

Perimeter: _____ Area: _____

Task/Question 2:

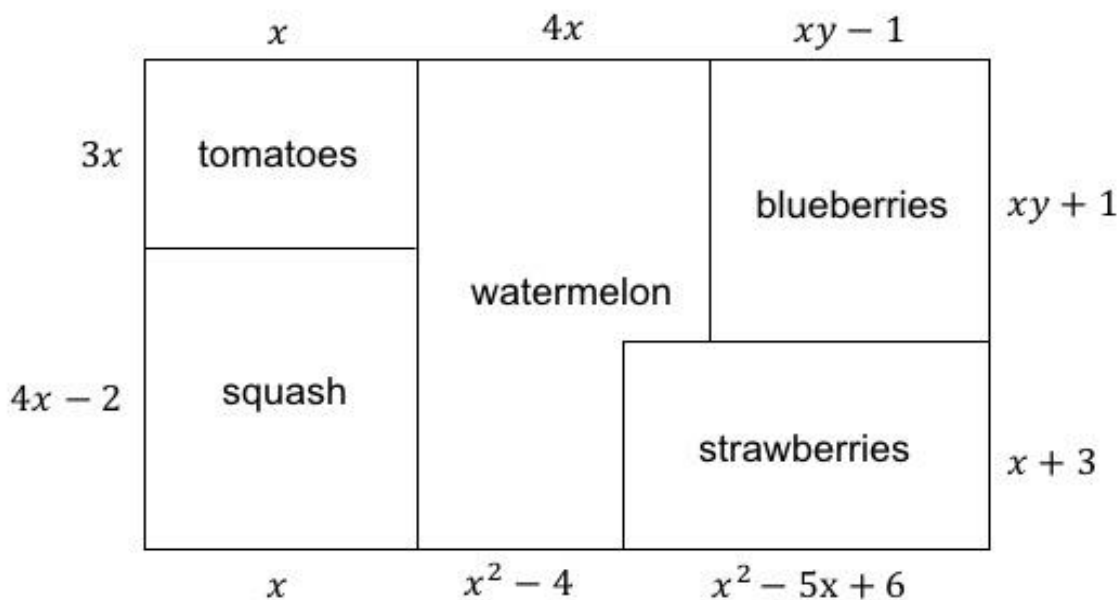
Kim ordered a new refrigerator from **A+ Appliances**. When the new appliance arrived, it was in a box with the dimensions given in feet listed below:



- A. What is the perimeter of the top of the box?
- B. What is the volume of the box?
- C. How much cardboard was used to make this box?
- D. Explain how you got your answer in Part C along with how you know you are correct:

Task/Question 3:

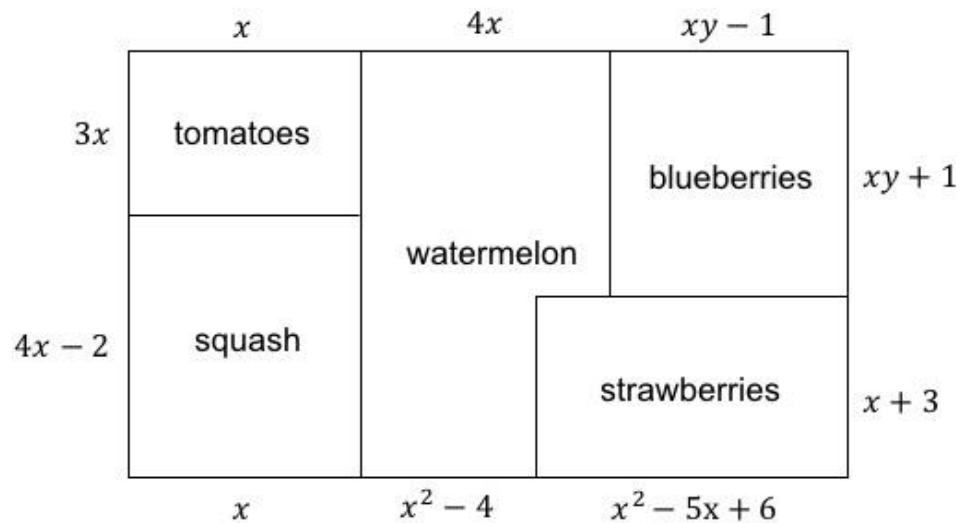
Farmer George is planting a garden in an area behind his barn. The garden will have both fruits and vegetables. To begin his garden, he is planting tomatoes, squash, blueberries, strawberries and watermelon. His plan for the field layout in meters is as shown in the diagram below:



- Write a polynomial expression that represents the perimeter of the squash field and simplify your answer:
- What is the area of the strawberry field?
- Which field's area represents the difference of two squares?
- What is the perimeter of Farmer George's total garden?
- Explain how you got your answer to Part D:

Task/Question 4:

Farmer George realized that he forgot to include a okra field into his field layout. He plans to use the same amount of area that the tomatoes and squash occupy *together* and will plant right next to them on the west side of the field. He will keep all measurements in meters.



- What will the perimeter of the okra field be?
- Find the total area of the okra, tomato and squash fields:
- If the x value is 4, what is the area in square meters of the answer from Part B?
- Farmer George needs your helping calculating the perimeter and area of the watermelon field as shown in the diagram:

Perimeter: _____ Area: _____

- E. How did you determine the best approach needed to solve the answer to Part D? Justify and defend how your approach to solving this is the **most efficient** method.



meteoreducation.com . 800.699.7516

MeTEOR CONNECT, MeTEOR Education and MeTEOR Design are trademarks or registered trademarks of MeTEOR Education, LLC © 2019.

All rights reserved. PTMATHALGI.2