Name:_____

Midterm
Constructed Response

1. Perform the indicated tasks.

A. Simplify $\sqrt{120}$. Leave your answer in simplified radical form.

$\sqrt{120}$ = _____

B. Simplify b^3b^4. Give your answer with a single base and a single exponent.

b^3b^4 = _____

A list of real numbers is shown below.

$3\sqrt{7}$ $\sqrt{54}$ $(2\sqrt{2})^2$ $(\sqrt{5})^3$

C. List the real numbers shown from **least** to **greatest**.

_____ _____ _____ _____

least **greatest**

The value of d is a real number such that $\sqrt{0.8} \leq d \leq \sqrt{0.9}$. A list of expressions is shown below.

$\sqrt{d^2}$ $\sqrt{d^3}$ $2\sqrt{d}$ $d^2\sqrt{d}$

D. List the expressions shown from **least** to **greatest** for all possible values of d.

_____ _____ _____ _____

least **greatest**

2. Three monomials are shown below.

$12a^2b^6$ $28a^4$ $42ab^3$

A What is the greatest common factor (GCF) of these monomials?

Answer: _____

B Divide $12a^2b^6$ by the greatest common factor (GCF) you found in **part A.**

Answer: _____

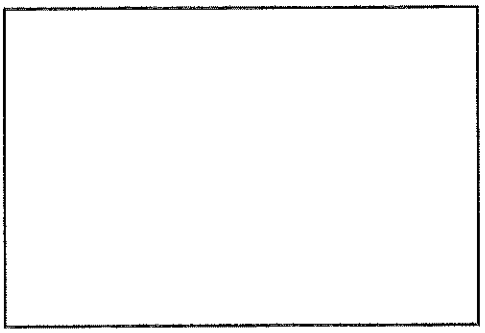
C What is the least common multiple (LCM) of these monomials?

Answer: _____

D Simplify $(12a^2b^6)^2$.

Answer: _____

3. Keng creates a painting on a rectangular canvas with a width that is four inches longer than the height, as shown in the diagram below.



A. Write a polynomial expression, in simplified form, that represents the area of the canvas.

Keng adds a 3-inch-wide frame around all sides of his canvas.

B. Write a polynomial expression, in simplified form, that represents the **total area** of the canvas and the frame.

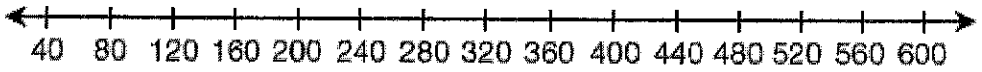
Keng is unhappy with his 3-inch-wide frame, so he decides to put a frame with a different width around his canvas. The total area of the canvas and the new frame is given by the polynomial $h^2 + 8h + 12$, where h represents the height of the canvas.

C. Determine the width of the new frame. Show all your work. Explain why you did each step.

4. Rolando drives at least 40 miles but less than 60 miles each week.

A. Graph the compound inequality representing all of the possible distances Rolando could drive for 8 weeks.

Rolando's Driving for 8 Weeks



Miles Driven

B. Explain why you chose to use the symbols you used for the endpoints of the compound inequality in **part A**.

Rolando buys at least 8.5 but no more than 11 gallons of gas each week. The price of gas has ranged from \$2.40 to \$2.65 per gallon each week.

C. Write an inequality to model all of the possible amounts of money (m) Rolando spends on gas each week. Show or explain all your work.