UNIT 1: RELATIONSHIPS BETWEEN QUANTITIES AND EXPRESSIONS

1.1 Use Properties of Rational and Irrational Numbers

1. Look at the radical.

$$-8\sqrt{726}$$

What is a rewritten form of the radical?

A. $-88\sqrt{6}$

B. -90.75

C. $-986\sqrt{6}$

D. $-2{,}904$

2. Look at the expression.

$$2\sqrt{8} \cdot \sqrt{20}$$

Which of these is equivalent to this expression?

A. $2\sqrt{28}$

B. 5

C. $8\sqrt{10}$

D. $32\sqrt{10}$

3. Which sum is rational?

A. $\pi + 18$

B. $\sqrt{25} + 1.75$

C. $\sqrt{3} + 5.5$

D. $\pi + \sqrt{2}$

4. Which product is irrational?

A. $\sqrt{2} \cdot \sqrt{50}$

B. $\sqrt{64} \cdot \sqrt{4}$

C. $\sqrt{9} \cdot \sqrt{49}$

D. $\sqrt{10} \cdot \sqrt{8}$

Answers to Unit 1.1 Sample Items

1. A 2. C 3. B 4. D

1.2 Reason Quantitatively and Use Units to Solve Problems

1. **A rectangle has a length of 12 meters and a width of 400 centimeters. What is the perimeter, in cm, of the rectangle?**

   A. 824
   B. 1,600
   C. 2,000
   D. 3,200

2. **Jill swam 200 meters in 2 minutes 42 seconds. If each lap is 50 meters long, which time is her estimated time, in seconds, per lap?**

   A. 32
   B. 40
   C. 48
   D. 60

Answers to Unit 1.2 Sample Items

1. D 2. B

1.3 Interpret the Structure of Expressions

1. **In which expression is the coefficient of the n term –1?**

   A. $3n^2 + 4n - 1$
   B. $-n^2 + 5n + 4$
   C. $-2n^2 - n + 5$
   D. $4n^2 + n - 5$

2. **The expression s^2 is used to calculate the area of a square, where s is the side length of the square. What does the expression $(8x)^2$ represent?**

   A. the area of a square with a side length of 8
   B. the area of a square with a side length of 16
   C. the area of a square with a side length of $4x$
   D. the area of a square with a side length of $8x$

Answers to Unit 1.3 Sample Items

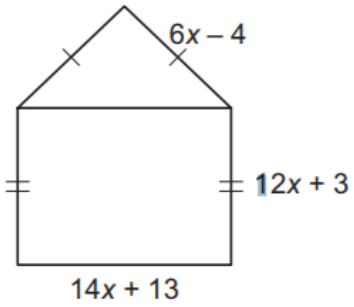
1. C 2. D

1.4 Perform Arithmetic Operations on Polynomials

1. **What is the product of $7x - 4$ and $8x + 5$?**

   A. $15x + 1$
   B. $30x + 2$
   C. $56x^2 + 3x - 20$
   D. $56x^2 - 3x + 20$

2. **A model of a house is shown.**



   What is the perimeter, in units, of the model?

   A. $32x + 12$
   B. $46x + 25$
   C. $50x + 11$
   D. $64x + 24$

3. **Which expression has the same value as the expression $(8x^2 + 2x - 6) - (5x^2 - 3x + 2)$?**

   A. $3x^2 - x - 4$
   B. $3x^2 + 5x - 8$
   C. $13x^2 - x - 8$
   D. $13x^2 - 5x - 4$

Answers to Unit 1.4 Sample Items

1. C 2. C 3. B