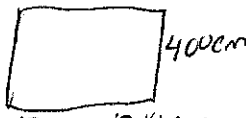


Question	Answer
<b>Use Properties of Rational and Irrational Numbers</b>	
<p>1. Look at the radical. <math>-8\sqrt{726}</math> Which of these is equivalent to this expression?</p> <p>A. <math>-88\sqrt{6}</math> B. <math>-90.75</math> C. <math>-986\sqrt{6}</math> D. <math>-2,904</math></p> <p><i>Handwritten work:</i>  <math>-8 \cdot 11 \sqrt{2 \cdot 3}</math>  <math>= -88\sqrt{6}</math>  <math>726 = 2 \cdot 3 \cdot 3 \cdot 3 \cdot 11 \cdot 11</math></p>	A
<p>2. Look at the expression. <math>2\sqrt{8} \cdot \sqrt{20}</math></p> <p>A. <math>2\sqrt{28}</math> B. 5 C. <math>8\sqrt{10}</math> D. <math>32\sqrt{10}</math></p> <p><i>Handwritten work:</i>  <math>2 \cdot 2 \cdot 2 \sqrt{2 \cdot 5}</math>  <math>= 8\sqrt{10}</math></p>	C
<p>3. Which sum is rational?</p> <p>A. <math>\pi + 18</math> NO B. <math>\sqrt{25} + 1.75</math> <math>5 + 1.75 = 6.75</math> C. <math>\sqrt{3} + 5.5</math> NO D. <math>\pi + 2</math> NO</p>	B
<p>4. Which product is irrational?</p> <p>A. <math>\sqrt{2} \cdot \sqrt{50}</math> 10 B. <math>\sqrt{64} \cdot \sqrt{4}</math> 16 C. <math>\sqrt{9} \cdot \sqrt{49}</math> 21 D. <math>\sqrt{10} \cdot \sqrt{8}</math> 8.94427191</p>	D
<b>Reason Quantitatively and Use Units to Solve Problems</b>	
<p>5. Convert 309 yards to feet.</p>	927 ft.
<p>6. Convert 45 miles per hour to feet per minute.</p>	$3960 \frac{\text{ft}}{\text{min}}$
<p>7. When Justin goes to work, he drives at an average speed of 65 miles per hour. It takes about 1 hour and 30 minutes for Justin to arrive at work. His car travels about 25 miles per gallon of gas. If gas costs \$3.65 per gallon, how much money does Justin spend on gas to travel to work?</p>	$65 \frac{\text{miles}}{\text{hr}} \cdot 1.5 \text{ hrs} = 97.5 \text{ miles}$ $\frac{97.5 \text{ miles}}{25 \text{ miles/gal}} \cdot \frac{\$3.65}{\text{gal}} = \boxed{\$14.235}$
<p>8. The formula for density <math>d</math> is <math>d = \frac{m}{v}</math>, where <math>m</math> is mass and <math>v</math> is volume. If mass is measured in kilograms and volume is measured in cubic meters, what is the unit for density?</p>	$\frac{\text{Kilograms}}{\text{meters}^3} = \frac{\text{Kg}}{\text{m}^3}$
<p>9. A rectangle has a length of 12 meters and a width of 400 centimeters. What is the perimeter, in cm, of the rectangle?</p> <p>A. 824 cm B. 1,600 cm C. 2,000 cm D. 3,200 cm</p> <p><i>Handwritten work:</i>    <math>2(400) + 2(1200)</math>  <math>= 800 + 2400 = 3200 \text{ cm}</math>  <math>12 \text{ m} = 1200 \text{ cm}</math>     <math>\text{m to cm} = \times 100</math></p>	D
<p>10. Jill swam 200 meters in 2 minutes 42 seconds. If each lap is 50 meters long, which is MOST LIKELY to be her time, in seconds, per lap?</p> <p>A. 32 seconds B. 40 seconds C. 48 seconds D. 60 seconds</p>	$200 \div 50 = 4 \text{ laps}$ $(2 \text{ min} \cdot \frac{60 \text{ sec}}{\text{min}}) + 42 \text{ sec} = 162 \text{ sec}$ $\frac{162 \text{ sec}}{4 \text{ laps}} = \frac{40.5 \text{ sec}}{\text{lap}}$

B      $\frac{162 \text{ sec}}{4 \text{ laps}} = \frac{40.5 \text{ sec}}{\text{lap}}$

**Interpret the Structure of Expressions**

11. Consider the expression  $3n^2 + n + 2$ .

- a. What is the coefficient of  $n$ ? 1  
 b. What terms are being added in the expression?

a. 1  
 b.  $3n^2, n, 2$

12. Look at one of the formulas for the perimeter of a rectangle where  $l$  represents the length and  $w$  represents the width.  $2(l+w)$   
 What does the 2 represent in this formula?

2 sides of length  
 2 sides of width

13. In which expression is the coefficient of term " $n$ " - 1?

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

C

14. 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?

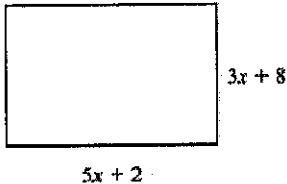
- A. the area of a square with a side length of 8  
 B. the area of a square with a side length of 16  
 C. the area of a square with a side length of  $4x$   
 D. the area of a square with a side length of  $8x$

$8x \cdot 8x = \text{side} \times \text{side}$   
 Area of Square = Side<sup>2</sup>  
 $8x^2$

D

**Perform Arithmetic Operations on Polynomials**

15. The dimensions of a rectangle are shown. What is the perimeter, in units, of the rectangle?



$$\begin{aligned} P &= 2L + 2W \\ &= 2(3x+8) + 2(5x+2) \\ &= 6x + 16 + 10x + 4 \\ &= 16x + 20 \end{aligned}$$

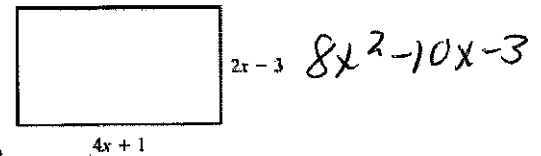
Perimeter =  
 $16x + 20$  units

16. Rewrite the expression  $(x^3 + 2x^2 - x) - (-x^3 + 2x^2 + 6)$ .

$$x^3 + 2x^2 - x + x^3 - 2x^2 - 6 = 2x^3 - x - 6$$

$$2x^3 - x - 6$$

17. The dimensions of a patio, in feet, are shown below. What is the area of the patio, in square feet?



$$\begin{aligned} \text{Area} &= L \cdot W \\ &= (4x+1)(2x-3) \\ &= 8x^2 + 2x - 12x - 3 = 8x^2 - 10x - 3 \end{aligned}$$

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

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

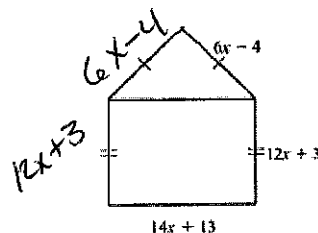
$$\begin{aligned} &(7x-4)(8x+5) \\ &= 56x^2 - 32x + 35x - 20 = \\ &56x^2 + 3x - 20 \end{aligned}$$

$$56x^2 + 3x - 20$$

C

19. A model of a house is shown. What is the perimeter, in units, of the model?

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



$$\begin{aligned} &2(6x-4) + 2(12x+3) + 14x + 13 = \\ &12x - 8 + 24x + 6 + 14x + 13 = \\ &50x + 11 \text{ units} \end{aligned}$$

C

20. 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.  $13x^2 - 5x - 4$

$$\begin{aligned} &8x^2 + 2x - 6 - 5x^2 + 3x - 2 \\ &= 3x^2 + 5x - 8 \end{aligned}$$

B