

# Chapter 3

NO CALCULATOR

① Which of the following statements are true?

I.	The factors of 24 are 2, 3, 4, 6, 8 and 12.
II.	The prime factorization of 24 is $2^3 \times 3^1$ .
III.	The prime factors of 24 are 2 and 3.
IV.	$\sqrt{24}$ is an irrational number.

- A. I and IV only
- B. II and III only
- C. II, III and IV only
- D. I, II, III and IV

② What is the least common multiple of 18 and 24?

- A.  $2 \times 3$
- B.  $2^2 \times 3^3$
- C.  $2^3 \times 3^2$
- D.  $2^4 \times 3^3$

③ What is the greatest common factor of 12, 24, 30, 72?

- A. 360
- B. 12
- C. 6
- D. 2

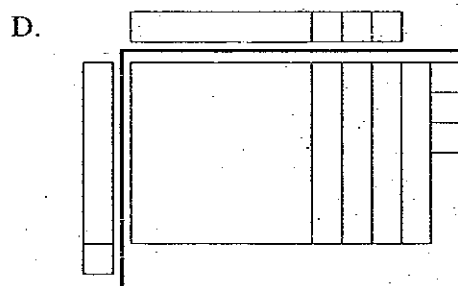
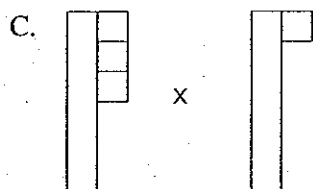
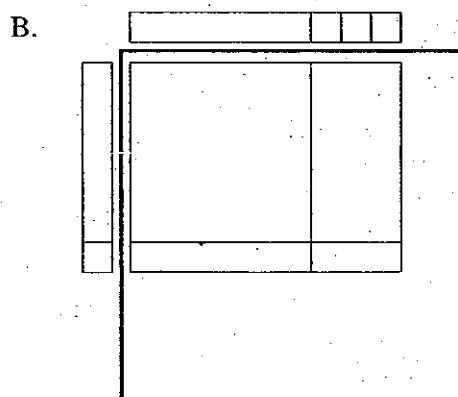
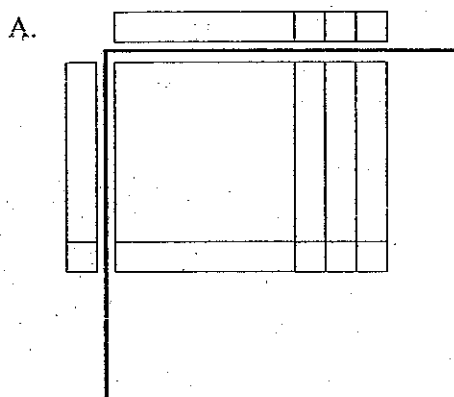
CALCULATOR PERMITTED

④ Which two numbers have the following properties?

- Their GCF is 12.
- Their LCM is 72.

- A. 2 and 3  
 B. 24 and 36  
 C. 48 and 72  
 D. 72 and 864

⑤ Which of the following diagrams best represents the expansion of  $(x+3)(x+1)$  pictorially?



⑥ Expand and simplify:  $(x-4)^3$

- A.  $x^3 - 12x^2 + 48x - 64$   
 B.  $x^3 + 12x^2 + 48x + 64$   
 C.  $x^3 - 4x^2 + 16x + 64$   
 D.  $x^3 - 64$

- 7 Which of the following expressions have a factor of  $x + 2$ ?

I.	$x^2 - 4$
II.	$2x^2 - x - 10$
III.	$5x + 10$

- A. I only  
 B. III only  
 C. I and III only  
 D. I, II and III

- 8 Factor:  $y^2 - 81$

- A.  $(y-9)^2$   
 B.  $(y+9)^2$   
 C.  $(y+9)(y-9)$   
 D.  $(y+3)(y-3)(y+9)$

- 9 Katie simplified the expression  $(x+b)(x+c)$ , where  $b < 0$  and  $c < 0$ , to the form  $x^2 + gx + k$ . What must be true about  $g$  and  $k$ ?

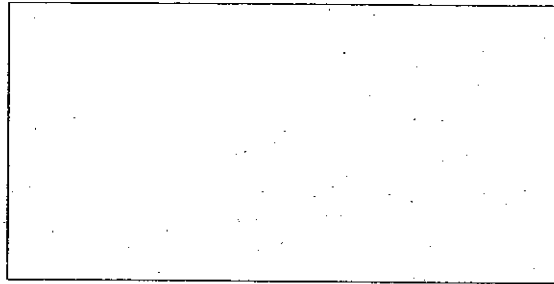
- A.  $g < 0$  and  $k > 0$   
 B.  $g < 0$  and  $k < 0$   
 C.  $g > 0$  and  $k > 0$   
 D.  $g > 0$  and  $k < 0$

- 10 Expand and simplify:  $(4x-3)^2$

- A.  $16x^2 + 9$   
 B.  $16x^2 - 12x + 9$   
 C.  $16x^2 - 24x - 9$   
 D.  $16x^2 - 24x + 9$

⑪

Given that the area of the rectangle below is  $2x^2 + 9x - 5$ , determine the length of the rectangle.



- A.  $2x - 1$
- B.  $2x + 1$
- C.  $2x + 9$
- D.  $2x^2 + 8x - 10$

⑫

Pam expanded and simplified  $(x - 3)(x^2 + 2x - 4)$ , as shown below.

Steps	
I.	$x(x^2 + 2x - 4) - 3(x^2 + 2x - 4)$
II.	$x^3 + 2x^2 - 4x - 3x^2 + 6x - 12$
III.	$x^3 - x^2 + 2x - 12$

In which step is Pam's first error?

- A. Step I
- B. Step II
- C. Step III
- D. There is no mistake.

⑬

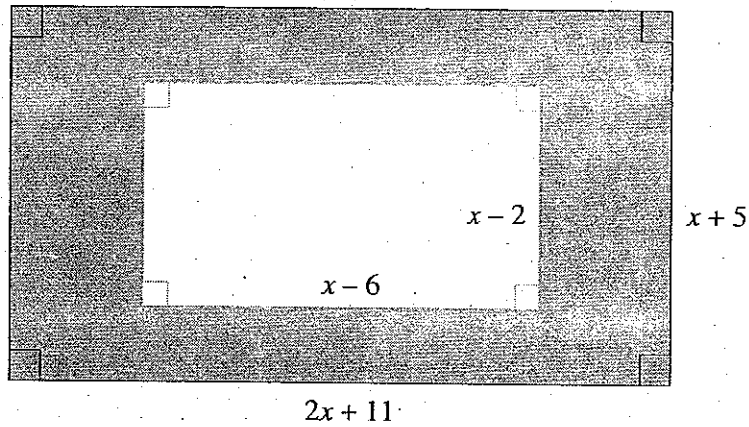
Which of the following expressions is a factor of  $x^2 - 8x - 20$ ?

- A.  $x - 2$
- B.  $x - 4$
- C.  $x - 5$
- D.  $x - 10$

14 Determine the greatest common factor of  $12x^5y$ ,  $4x^3y^2$  and  $6x^2y^4$ .

- A.  $2xy$
- B.  $2x^2y$
- C.  $4x^3y^2$
- D.  $12x^5y^4$

15 Determine an expression to represent the shaded area below.



- A.  $x^2 + 43$
- B.  $x^2 + 13x + 67$
- C.  $x^2 + 29x + 43$
- D.  $3x^2 + 13x + 67$

16 When completely factored, how many factors does  $2x^4 - 24x^2 - 128$  have?

- A. 2
- B. 3
- C. 4
- D. 5



CHAPTER 3  
Answer Key

No Calc M/C

- 1. C
- 2. C
- 3. C

Calculator M/C

- 4. B
- 5. A
- 6. A
- 7. D
- 8. C
- 9. A
- 10. D
- 11. A
- 12. B
- 13. D
- 14. B
- 15. C
- 16. C
- 17. B

Numerical Response

18.  $\overset{+}{\bullet} \overset{-}{\circ} \square \square \square 9 . \square \square$