Name: _____ Date: _____

1 Chapter Test

MULTIPLE CHOICE

1. Which conjecture about the product of three odd integers seems most reasonable?

A. It will be an even integer.

B. It will be an odd integer.

C. It will be negative.

D. It is not possible to make a conjecture.

2. Which conjecture about the interior angles in a hexagon seems most reasonable?

A. Their sum is always 180°.

B. Their sum is always 360°.

C. Their sum is always 720°.

D. It is not possible to make a conjecture.

3. Rainfeather noticed the following:

$$\frac{432\,432}{7} = 61\,776, \quad \frac{432\,432}{11} = 39\,312, \quad \frac{432\,432}{13} = 33\,264, \quad \text{and}$$

$$\frac{172\,172}{7} = 24\,596, \quad \frac{172\,172}{11} = 15\,652, \quad \frac{172\,172}{13} = 13\,244$$

Which conjecture might Rainfeather make from this evidence? Is this conjecture reasonable?

A. Any six-digit number composed of three repeating digits is divisible by 7, 11, and 13; yes, this is reasonable.

B. Any six-digit number is divisible by 7, 11, and 13; no, this is not reasonable.

C. Any odd number is divisible by 7, 11, and 13; yes, this is reasonable.

D. It is not possible to make a conjecture.

4. Which figure is a counterexample to the conjecture "All polygons with eight equal sides are regular octagons"?

A. Figure I only

B. Figure II only

C. Figure I and Figure II

D. neither Figure I nor Figure II

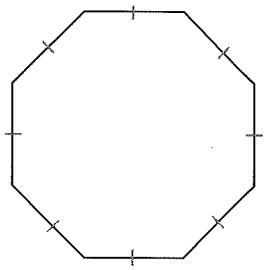

Figure I

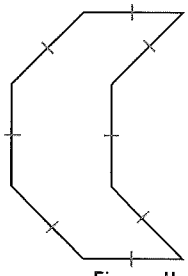

Figure II

5. Which choice provides a counterexample to the conjecture "When you divide one whole number by another whole number, the quotient will be greater than the divisor and less than the dividend"?

A. $\frac{14}{2} = 7$ but not $\frac{6}{8} = 0.75$

B. $\frac{6}{8} = 0.75$ but not $\frac{14}{2} = 7$

C. $\frac{14}{2} = 7$ and $\frac{6}{8} = 0.75$

D. neither $\frac{14}{2} = 7$ nor $\frac{6}{8} = 0.75$

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6. All kangaroos are marsupials. All marsupials are mammals. All mammals are warm-blooded. Ginger Jack is a kangaroo. What can be deduced about Ginger Jack?

A. Ginger Jack is warm-blooded but is not a mammal.

B. Ginger Jack is a mammal but is not warm-blooded.

C. Ginger Jack is warm-blooded and a mammal.

D. Ginger Jack is neither warm-blooded nor a mammal.

7. What type of error, if any, occurs in the following deduction?

"All people who work do so from 9 a.m. to 5 p.m., with one hour for lunch. Bill works, so he works from 9 a.m. to 5 p.m."

A. a false assumption or generalization

B. an error in reasoning

C. an error in calculation

D. There is no error in the deduction.

8. What type of error, if any, occurs in the following proof?

Suppose that: $a + b = c$

Then: $(4a - 3a) + (4b - 3b) = (4c - 3c)$

Reorganize: $4a + 4b - 4c = 3a + 3b - 3c$

Using distribution: $4(a + b - c) = 3(a + b - c)$

$4 = 3$

A. an error in calculation

B. an error in reasoning

C. a false assumption or generalization

D. There is no error in the deduction.

NUMERICAL RESPONSE

9. Determine the unknown term in each pattern.

a) 3, 12, 48, 192, _____, 3072, 12 288

b) 12 500, 2500, _____, 100, 20, 4

c) 14, 28, 56, 112, _____, 448, 896

10. What number should go in each square of this Sudoku puzzle?

a) square A ___

b) square B ___

c) square C ___

d) square D ___

2	A	6		4		3	7	
8		4			9		5	
		B	1		C			
	2							3
		8	6		7	9		
5	6						1	
		D			4			
	5		3			8		2
	7	3		6		5		1

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WRITTEN RESPONSE

11. Do you agree or disagree with the following conjectures? Justify your decisions with a counterexample if possible.

a) The sum of a multiple of 5 and a multiple of 15 will be an odd number.

b) The sum of a multiple of 5 and a multiple of 15 will be an even number.

12. In this equation, x is an integer. What does the equation prove? Support your answer with a specific example.

$$x + (x + 1) + (x + 2) + (x + 3) + (x + 4) + (x + 5) + (x + 6) = 7x + 21$$

13. Do you agree or disagree with the following conjecture? Justify your decision with a counterexample if possible.

"Forensic scientists will always discover enough evidence to convict the guilty person, because that is what happens on television."

14. Form a conclusion based on the following statements. Explain whether your reasoning was inductive or deductive.

"All marsupials have pouches." "Kangaroos are marsupials."

15. Continue the sequence 5, 14, 23, 32, 41, … by two terms. Explain whether your reasoning was inductive or deductive.

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