

1 Test Prep

Complete the following to summarize the important ideas from this chapter.

Q: What does inductive reasoning involve?

A: • Inductive reasoning starts with specific _____.

• Identifying _____ and observing _____ may lead to a general _____. This _____ can then be stated as a _____.

NEED HELP?
• See Lesson 1.1

Q: What role does evidence play in supporting conjectures?

A: • Finding _____ evidence supporting a conjecture makes it _____ likely true.

• Evidence can also show a conjecture to be _____ but can suggest ways to _____ the conjecture.

NEED HELP?
• See Lessons 1.1, 1.2

Q: What is a counterexample, and how does it relate to a conjecture?

A: • A counterexample is an example that _____ a conjecture. This means that the conjecture is _____.

• If you cannot find a counterexample, you _____ be certain a counterexample does not exist.

• If you do find a counterexample, the conjecture must be _____.

However, you may be able to _____ the conjecture.

NEED HELP?
• See Lesson 1.3

Conjecture:
All prime numbers
are odd.
X
2 is prime.

NEED HELP?
• See Lesson 1.4

Q: What does deductive reasoning involve?

A: • Deductive reasoning starts with general _____ known to be true.

• _____ reasoning then leads to a specific _____.

• A _____ of a conjecture must involve _____ cases.

NEED HELP?
• See Lesson 1.5

Q: What are some common errors in proofs?

A: • _____ by zero is an example of a(n) _____ in reasoning.

• A false _____ or _____ can lead to _____ reasoning; that is, "proving" something that you began by assuming.

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1 Chapter Test

MULTIPLE CHOICE

- Which conjecture about the product of three odd integers seems most reasonable?
 - It will be an even integer.
 - It will be an odd integer.
 - It is not possible to make a conjecture.
 - It is not possible to make a conjecture.
- Which conjecture about the interior angles in a hexagon seems most reasonable?
 - Their sum is always 180° .
 - Their sum is always 360° .
 - Their sum is always 720° .
 - 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?

- Any six-digit number composed of three repeating digits is divisible by 7, 11, and 13; yes, this is reasonable.
 - Any six-digit number is divisible by 7, 11, and 13; no, this is not reasonable.
 - Any odd number is divisible by 7, 11, and 13; yes, this is reasonable.
 - It is not possible to make a conjecture.
- Which figure is a counterexample to the conjecture "All polygons with eight equal sides are regular octagons"?
 - Figure I only
 - Figure II only
 - Figure I and Figure II
 - neither Figure I nor Figure II
 - 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"?
 - $\frac{14}{2} = 7$ but not $\frac{6}{8} = 0.75$
 - $\frac{6}{8} = 0.75$ but not $\frac{14}{2} = 7$
 - $\frac{14}{2} = 7$ and $\frac{6}{8} = 0.75$
 - neither $\frac{14}{2} = 7$ nor $\frac{6}{8} = 0.75$

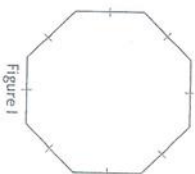


Figure I



Figure II

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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?
- Ginger Jack is warm-blooded but is not a mammal.
 - Ginger Jack is a mammal but is not warm-blooded.
 - Ginger Jack is warm-blooded and a mammal.
 - 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 false assumption or generalization
 - an error in reasoning
 - an error in calculation
 - 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:
- $$4(a + b - c) = 3(a + b - c)$$
- $$4 = 3$$
- an error in calculation
 - an error in reasoning
 - a false assumption or generalization
 - There is no error in the deduction.

NUMERICAL RESPONSE

9. Determine the unknown term in each pattern.
- 3, 12, 48, 192, _____, 3072, 12 288
 - 12 500, 2500, _____, 100, 20, 4
 - 14, 28, 56, 112, _____, 448, 896
10. What number should go in each square of this Sudoku puzzle?
- square A _____
 - square B _____
 - square C _____
 - square D _____

2	A	6	4	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

WRITTEN RESPONSE

11. Do you agree or disagree with the following conjectures? Justify your decisions with a counterexample if possible.
- The sum of a multiple of 5 and a multiple of 15 will be an odd number.
 - 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.