

1.2 - Inductive and Deductive Reasoning

1. Perform the operations.

$$6 + 8 \times 5$$

- a. 49
- b. 70
- c. 46
- d. 43
- e. 40

ANSWER:

c

2. Perform the operations.

$$\frac{16}{2} \cdot 5$$

- a. 80
- b. 86
- c. 83
- d. 74
- e. 40

ANSWER:

e

3. Perform the operations.

$$2 + 4 \cdot (6 + 10) - 6 \cdot 5$$

- a. 33
- b. 39
- c. 36
- d. 37
- e. 300

ANSWER:

c

4. What is the sum of the first 80 consecutive odd numbers?

- a. 6,396
- b. 6,404
- c. 6,360
- d. 6,400
- e. 6,480

ANSWER:

d

5. Use the following pattern and inductive reasoning to predict the answer to $9 \times 654321 - 1$.

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$$\begin{aligned} 9 \times 1 - 1 &= 8 \\ 9 \times 21 - 1 &= 188 \\ 9 \times 321 - 1 &= 2888 \\ 9 \times 4321 - 1 &= 38888 \end{aligned}$$

- a. 5,888,889
- b. 5,888,893
- c. 5,888,883
- d. 588,888
- e. 5,888,888

ANSWER:

e

6. Use the following pattern and inductive reasoning to predict the answer to **123456789 · 7200**.

$$\begin{aligned} 123456789 \times 9 &= 111111101 \\ 123456789 \times 18 &= 222222202 \\ 123456789 \times 27 &= 333333303 \end{aligned}$$

- a. 1,777,777,761,600
- b. 888,888,880,788
- c. 88,888,888,080
- d. 888,888,880,806
- e. 888,888,880,800

ANSWER:

e

7. Find the seven pattern.

- a. 7, 5, 3, 1, 8, 7, 5, 3, 9, ...
- b. 7, 6, 4, 2, 7, 7, 5, 3, 8, ...
- c. 7, 6, 3, 2, 8, 7, 4, 3, 9, ...
- d. 7, 5, 3, 1, 8, 6, 4, 2, 9, ...
- e. 7, 5, 4, 1, 7, 6, 5, 2, 8, ...

ANSWER:

d

8. Use Euler circles to check the validity of the argument.

All candy is fattening. All candy is delicious. Therefore, all fattening food is delicious.

The argument is _____.

- a. not valid
- b. valid

ANSWER:

a

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9. Use Euler circles to check the validity of the argument.

No politicians are honest. Some dishonest people are found out. Therefore, some politicians are found out.

The argument is _____.

- a. not valid
- b. valid

ANSWER:

a

10. Use Euler circles to check the validity of the argument.

All lions are fierce. Some lions do not drink coffee. Therefore, some creatures that drink coffee are not fierce.

The argument is _____.

- a. not valid
- b. valid

ANSWER:

a

11. Perform the operations.

$$4 + 2 \times 6$$

ANSWER:

16

12. Perform the operations.

$$\frac{40}{4} \cdot 5$$

ANSWER:

50

13. Perform the operations.

$$3 + 5(3 + 12) - 5 \times 3$$

ANSWER:

63

14. What is the sum of the first 100 consecutive odd numbers?

ANSWER:

10,000

15. Consider the pattern:

$$\begin{aligned} 9 \times 1 - 1 &= 8 \\ 9 \times 21 - 1 &= 188 \\ 9 \times 321 - 1 &= 2888 \\ 9 \times 4321 - 1 &= 38888 \end{aligned}$$

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Use this pattern to find $9 \times 87654321 - 1$.

ANSWER: 788,888,888

16. Consider the pattern:

$$123456789 \times 9 = 1111111101$$

$$123456789 \times 18 = 2222222202$$

$$123456789 \times 27 = 3333333303$$

Use this pattern to find 123456789×7200 .

ANSWER: 888,888,880,800

17. Find the first five terms of the seven pattern.

ANSWER: 7, 5, 3, 1, 8