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1. The student wants to read a book of ##pages## pages. How many pages should he read per day to finish the book in a week?

a. ##inc1##
b. ##inc2##
c. ##a##
d. ##inc3##

ANSWER: c

2. Find the sixth term in the pattern.

$2, 2, 4, 6, 10, \ldots$

a. 60
b. 15
c. 14
d. 16

ANSWER: d

3. What is the missing number in the sequence below?

$\frac{1}{6}, \frac{1}{3}, \frac{1}{2}, \underline{?}, \frac{5}{6}, \ldots$

ANSWER: $\frac{2}{3}$

4. Use inductive reasoning to predict the most probable next number in the given list.

$1, 8, 27, 64, \underline{?}$

a. 256
b. 125
c. 101
d. 625
e. 91

ANSWER: b

5. Use inductive reasoning to predict the most probable next number in the given list.

$-1, 5, -2, 4, -3, 3, \underline{?}$

a. 9
b. 0
c. –11
d. –17
e. –4

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ANSWER: e

6. Use inductive reasoning to decide whether the conclusion for the following argument is correct. Pick any counting number. Multiply the number by 6. Subtract 3 from the product. Divide the difference by the sum of the original number and 7. The resulting number is 6.

a. The conclusion is correct.
b. The conclusion is incorrect.
c. There is not enough information to determine the validity of the conclusion.

ANSWER: b

7. Use the data in the table and inductive reasoning to answer the question.

Cube edge length	Weight of water inside cube (water fills entire cube)
1 cm	1 g
2 cm	8 g
3 cm	27 g
4 cm	64 g

If a cube is filled with water and the weight of the water is 8 grams, what is the edge length of the cube?

a. 3
b. 4
c. 2
d. 1

ANSWER: c

8. Use inductive reasoning to help complete the table. Round your answer to two decimal places, if necessary.

Number of sides of a regular polygon	4	5	6	7	8	20
Interior angle measure	90	108	120	128.57		

a. 140, 162
b. 135, 450
c. 135, 162
d. 140, 450

ANSWER: c

9. Which is a valid conclusion based on the following information? An equilateral triangle has three congruent sides.

Given: ΔABC is equilateral.

a. $\angle ABC$ has a measure between $0°$ and $90°$.
b. $\overline{AB}$ and $\overline{BC}$ are collinear.

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c. B is the midpoint of $\overline{AC}$.

d. ΔABC has three congruent sides.

ANSWER: d

10. Alisa reads in a geometry book that two intersecting lines will lie in the same plane. Which statement is correct about the conclusion Alisa can make?

a. She can use deductive reasoning to conclude that if she draws two intersecting lines, the lines will not lie in the same plane.
b. She can use deductive reasoning to conclude that if she draws two intersecting lines, the lines will lie in the same plane.
c. She can use deductive reasoning to conclude that if she draws three intersecting lines, the lines will lie in the same plane.
d. She can use deductive reasoning to conclude that if she draws three intersecting lines, the lines will not lie in the same plane.

ANSWER: b

11. Use the pattern to make a conjecture. Then, use the conjecture to find the next product.

$4 \cdot 8 = 32$
$44 \cdot 8 = 352$
$444 \cdot 8 = 3{,}552$
$4{,}444 \cdot 8 = 35{,}552$

a. The product of a number consisting of $(n-1)$ 4s and 8 consists of 3, $(n-1)$5s and 2. The next product is 355,552.

b. The product of a number consisting of n 4s and 8 consists of 3, n 5s and 2. The next product is 35,552.

c. The product of a number consisting of $(n-1)$4s and 8 consists of 5, n 5s and 2. The next product is 35,552.

d. The product of a number consisting of n 4s and 8 consists of 3, $(n-1)$5s and 2. The next product is 355,552.

ANSWER: d

12. Find a counterexample to show that $x > \frac{1}{2x}$ is a false statement.

a. choose $x = 2$

b. choose $x = 1$

c. choose $x = 8$

d. choose $x = \frac{1}{2}$

e. choose $x = \frac{1}{2}$

ANSWER: d

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13. Which choice gives an example that supports the conjecture, and a counterexample that shows the conjecture is false?

For any real number n, $\sqrt{n^2} = n$.

a. $\sqrt{(7)^2} = 7$, but $\sqrt{(2)^2} = 2$

b. $\sqrt{(-7)^2} = 7$, but $\sqrt{(-2)^2} = 2$

c. $\sqrt{(-9)^2} = 3$, but $\sqrt{(2)^2} = 2$

d. $\sqrt{(7)^2} = 7$, but $\sqrt{(-2)^2} = 2$

ANSWER: d

14. Find a counterexample to show that $\frac{(x+11)(x-3)}{(x-3)} = (x+11)$ is a false statement.

a. choose $x = 11$

b. choose $x = 1$

c. choose $x = -3$

d. choose $x = -11$

e. choose $x = 3$

ANSWER: e

15. Use deductive reasoning to determine the number that will always be produced from the following procedure. Pick a number. Add 10 to the number and multiply the sum by 5. Subtract 10 and then decrease this difference by 5 times the original number.

a. Let n be the original number

$n+10$	(add 10)
$n+50$	(multiply by 5)
$n+40$	(substract 10)
$n+40-5\cdot n$	(decrease by 5 times original number)
35	(final number)

b. Let n be the original number

$n+10$	(add 10)
$5\cdot n+50$	(multiply by 5)
$-5\cdot n+40$	(substract 10)
$-5\cdot n+40-5\cdot n$	(decrease by 5 times original number)

30	(final number)

c. Let n be the original number

$n+10$	(add 10)
$5 \cdot n+50$	(multiply by 5)
$5 \cdot n+40$	(substract 10)
$5 \cdot n+40-5 \cdot n$	(decrease by 5 times original number)
40	(final number)

d. Let n be the original number

$10 \cdot n$	(add 10)
$50 \cdot n$	(multiply by 5)
$40 \cdot n$	(substract 10)
$40 \cdot n-5 \cdot n$	(decrease by 5 times original number)
$35 \cdot n$	(final number)

e. Let n be the original number

$n+10 \cdot n$	(add 10)
$5 \cdot n+50 \cdot n$	(multiply by 5)
$5 \cdot n+40 \cdot n$	(substract 10)
$5 \cdot n+40 \cdot n-5 \cdot n$	(decrease by 5 times original number)
$40 \cdot n$	(final number)

ANSWER: c

16. A number is divisible by 6 if the sum of the digits of the number is divisible by 3 and the number is even. Which statement is correct about the conclusion that can be made?

a. Deductive reasoning can be used to determine that 156,120 is divisible by 6.
b. Inductive reasoning can be used to determine that 156,120 is not divisible by 6.
c. Inductive reasoning can be used to determine that 156,120 is divisible by 6.
d. Deductive reasoning can be used to determine that 156,120 is not divisible by 6.

ANSWER: a

17. Three boys are in three different rooms. Ernest always tells the truth. Barry sometimes tells the truth. Mario never tells the truth. Use the statements made by the person in each room to tell who is in each of the rooms.

Room 1	Room 2	Room 3
The guy in Room 2 is Mario.	I'm Barry.	The guy in Room 2 is Ernest.

a. Room 1 - Mario; Room 2 - Barry; Room 3 - Ernest
b. Room 1 - Ernest; Room 2 - Mario; Room 3 - Barry

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c. Room 1 - Barry; Room 2 - Ernest; Room 3 - Mario
d. Room 1 - Mario; Room 2 - Ernest; Room 3 - Barry

ANSWER: b

18. Use inductive reasoning to predict the most probable next letter in the list. . . . , H, I, M, N, R, S, . . .

ANSWER: W