1. Matt made up a pattern.

$$
1,4,10,22,46
$$

What is the rule for Matt's pattern?
A multiply the number by two and then add two each time

B multiply the number by itself and then add the number each time

C add three to the number each time

D double the number each time
2. What is the rule for this number pattern?

$$
1,1,2,6,24,120, \ldots
$$

A add 0 , then add 1 , then add 2 , and so on

B multiply by 1 , then multiply by 2 , then multiply by 3 , and so on

C multiply by 1 , then add 1
D multiply by 2 , then subtract 1
3. Which set of numbers follows the same pattern rule as $17,19,21,23,25$ ?

A $1,2,3,4,5$
B $\quad 1,3,5,7,8$
C $\quad 1,3,5,7,9$
D $\quad 1,3,5,6,7$
4. A group of children designed a pattern with dots.


How many dots will be in the sixth box of their pattern?

A 15
B 17
C 21
D 28
5. If the pattern continues, how many toothpicks are needed to make the figure with six triangles?

| Number of <br> Triangles | Figure | Number of <br> Toothpicks |
| :---: | :---: | :---: |
| 1 | 1 | 3 |
| 2 | 12 | 5 |
| 3 | $1 / 3$ | 7 |
| 4 | $1 \sqrt[2]{3} 4$ | 9 |
| 5 |  |  |
| 6 |  |  |

A 11
B 13
C 15
D 17
6. Tonya is making a bracelet.


Her pattern continues until it ends with 5 white beads. What is the total number of beads needed to make the bracelet?

A 21
B 30
C 35
D 40
7. Josh's relatives take a family picture each time they meet at the beach. Pictures were taken in these years:

$$
1977,1981,1985,1989
$$

If this pattern continued, when were the next three pictures taken?

A 1993, 1997, 2001
B 1991, 1993, 1995
C 1993, 1999, 2001
D 1991, 1993, 1997
8. Carlos put 48 cookies into 8 equal rows. Which equation shows that $N$ is equal to the number of cookies in each row?

A $\quad N+8=48$
B $\quad N \times 48=8$
C $\quad 48 \times 8=N$
D $\quad 48 \div 8=N$
9. Dana, Joy, and Puja shared their compact discs (CDs) so that each girl got 12 CDs. Which equation can be used to determine how many CDs there were in all?

A $\square=12 \div 3$
B $\square=12-3$
C $\square=12+3$
D $\square=12 \times 3$
10. What is the value of the unknown in the number sentence $9=\square \div 4$ ?

A 45
B 36
C 32
D 5
11. What value will complete the equation?

$$
13+\square=6 \times 7
$$

A 39
B 31
C 29
D 19
12. What is the value of $N$ ?

$$
5,496+N=7,006
$$

A 2,510
B 2,490
C 1,610
D 1,510
13. In which number sentence is the value of $\Delta$ equal to 9 ?

A $\quad 64 \div \Delta=7$
B $\quad \Delta \div 9=11$
C $\quad 12 \times \Delta=108$
D $\Delta \times 11=118$

## End of Goal 5 Sample Items

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$8 \quad$ Objective:
Thinking Skill: Applying Correct An
Objective: $\quad \mathbf{5 . 0 3}$
Use symbols to represent unknown quantities in number sentences.
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$\begin{array}{lll}\text { Thinking Skill: Applying } & \text { Correct Answer: } & \text { A } \\ \text { Objective: } \quad \mathbf{5 . 0 3} & \\ \text { Use symbols to represent unknown quantities in number sentences. } & \\ \text { Thinking Skill: Applying } & \text { Correct Answer: } & \text { D }\end{array}$
Extend and find missing terms of repeating and growing patterns.
Extend and find missing terms of repeating and growing patterns.
Thinking Skill: Applying Correct Answer: ..... B
Extend and find missing terms of
Thinking Skill: Applying Correct Answer: ..... B
Thinking Skill: Applying
6 Objective: ..... 5.02
Objective: 5.02
Extend and find missing terms of repeating and growing patterns.
Thinking Skill: Applying Correct Answer: ..... C
Describe and extend numeric and geometric patterns.
Objective: $\quad 5.01$Thinking Skill: Applying
Correct Answer: ..... C
Objective: 5.01
Describe and extend numeric and geometric patterns.
Thinking Skill: Analyzing Correct Answer:
Objective: ..... 5.01
Describe and extend numeric and geometric patterns.
Thinking Skill: Analyzing Correct Answer: B
Objective:
Objective: ..... 5.02 ..... 5.02

Objective: $\quad 5.02$
7 Objective:Applying
5.03
Objective:
Use symbols to represent unknown quantities in number sentences.
Thinking Skill: Applying Correct Answer: ..... D
10 Objective: ..... 5.04
Find the value of the unknown in a number sentence.
Thinking Skill: Applying Correct Answer: ..... B
11 Objective: ..... 5.04
Find the value of the unknown in a number sentence.
Thinking Skill: Applying Correct Answer: ..... C

# Math Goal 5 Sample Items Key Report 

$12 \quad$ Objective: 5.04
Find the value of the unknown in a number sentence.
Thinking Skill: Applying Correct Answer: D
$13 \quad$ Objective: 5.04
Find the value of the unknown in a number sentence.
Thinking Skill: Applying Correct Answer: C

