



# MATH

TEACHER'S GUIDE

▶ **6th Grade**

---

# MATH 600

## Teacher's Guide

### **LIFEPAC® Overview** **5**

---

MATH: SCOPE AND SEQUENCE | 7

STRUCTURE OF THE LIFEPAC CURRICULUM | 12

TEACHING SUPPLEMENTS | 18

### **Unit 1: Whole Numbers and Algebra** **25**

---

ANSWER KEYS | 26

ALTERNATE LIFEPAC TEST | 39

### **Unit 2: Data Analysis** **41**

---

ANSWER KEYS | 42

ALTERNATE LIFEPAC TEST | 55

### **Unit 3: Decimals** **59**

---

ANSWER KEYS | 61

ALTERNATE LIFEPAC TEST | 69

### **Unit 4: Fractions** **71**

---

ANSWER KEYS | 72

ALTERNATE LIFEPAC TEST | 87

### **Unit 5: Fraction Operations** **89**

---

ANSWER KEYS | 90

ALTERNATE LIFEPAC TEST | 105

**Author:**

Alpha Omega Publications

**Editor:**

Alan Christopherson, M.S.



**804 N. 2nd Ave. E.**

**Rock Rapids, IA 51246-1759**

© MMXV by Alpha Omega Publications, Inc. All rights reserved. LIFEPAK is a registered trademark of Alpha Omega Publications, Inc.

All trademarks and/or service marks referenced in this material are the property of their respective owners. Alpha Omega Publications, Inc. makes no claim of ownership to any trademarks and/or service marks other than their own and their affiliates', and makes no claim of affiliation to any companies whose trademarks may be listed in this material, other than their own.

## **Unit 6: Ratio, Proportion, and Percent** **107**

---

ANSWER KEYS | 108

ALTERNATE LIFEPAC TEST | 119

## **Unit 7: Probability and Geometry** **123**

---

ANSWER KEYS | 125

ALTERNATE LIFEPAC TEST | 139

## **Unit 8: Geometry and Measurement** **143**

---

ANSWER KEYS | 144

ALTERNATE LIFEPAC TEST | 155

## **Unit 9: Integers and Transformations** **159**

---

ANSWER KEYS | 160

ALTERNATE LIFEPAC TEST | 173

## **Unit 10: Equations and Functions** **175**

---

ANSWER KEYS | 176

ALTERNATE LIFEPAC TEST | 187

## **Math Terms** **189**

---

## INSTRUCTIONS FOR SIXTH GRADE MATH

The LIFEPAC curriculum from grades two through twelve is structured so that the daily instructional material is written directly into the LIFEPACs. The student is encouraged to read and follow this instructional material in order to develop independent study habits. The teacher should introduce the LIFEPAC to the student, set a required completion schedule, complete teacher checks, be available for questions regarding both content and procedures, administer and grade tests, and develop additional learning activities as desired. Teachers working with several students may schedule their time so that students are assigned to a quiet work activity when it is necessary to spend instructional time with one particular student.

Math is a subject that requires skill mastery. But skill mastery needs to be applied toward

active student involvement. Measurements require measuring cups, rulers, empty containers. Boxes and other similar items help the study of solid shapes. Construction paper, beads, buttons, beans are readily available and can be used for counting, base ten, fractions, sets, grouping, and sequencing. Students should be presented with problem situations and be given the opportunity to find their solutions.

Any workbook assignment that can be supported by a real world experience will enhance the student's ability for problem solving. There is an infinite challenge for the teacher to provide a meaningful environment for the study of math. It is a subject that requires constant assessment of student progress. Do not leave the study of math in the classroom.

# MATH 601

## Unit 1: Whole Numbers and Algebra

# ANSWER KEYS

## SECTION 1

**1.1** a, c, b

**1.2** 2

6,241,095: 5: ones place; 9: tens place; 0: hundreds place; 1: thousands place; 4: ten thousands place; 2: hundred thousands place; 6: millions place

**1.3** thousands

993,140: 0: ones place; 4: tens place; 1: hundreds place; 3: thousands place; 9: ten thousands place; 9: hundred thousands place

**1.4** 6,350

Six thousand: 6,000; Three hundred: 300; Fifty: 50;  $6,000+300+50=6,350$

**1.5** 204,732

204,732: 2: ones place; 3: tens place; 7: hundreds place; 4: thousands place; 0: ten thousands place; 2: hundred thousands place

**1.6** Ava rounded incorrectly; the answer should be 19,000.

When rounding 19,350 to the nearest thousand, take into consideration the number to the right of the thousands place. Because 3 is a number less than 5, it does not round 9 up to the next number. Once the rounding rules are assessed, the numbers following the 9 are turned to zeros.

**1.7** 13,290

9: tens place so look to the 3 for rounding rules. Since 3 is less than 5, the 9 stays the same and the 3 turns to a zero.

**1.8** 2,600

149: rounds down to 100; 2,470: rounds up to 2,500;  $100+2,500=2,600$

**1.9** 30

538 rounds up to 540; 509 rounds up to 510;  $540-510=30$

**1.10** 1,500

629 rounds down to 600; 215 rounds down to 200; 111 rounds down to 100; 588 rounds up to 600;  $600+200+100+600=1,500$

**1.11** \$180.00

\$233.00 rounds down to \$230.00; \$47.00 rounds up to \$50.00; Profit= $\$230.00-\$50.00=\$180.00$

**1.12** false

Since this is an addition problem, 12 and 58 are addends, not factors.

**1.13** c, a, b

**1.14** 1,543

$629 + 215 + 111 + 88 = 1,543$

**1.15** \$139.00

$224 - 85 = 139$

**1.16** 192

$8 \times 24 = 192$

**1.17** 16

$192 \div 22 = 8 \text{ R}16$

**1.18** grouping

**1.19** multiplicative

**1.20** order

**1.21**  $(11 \times 10) + (11 \times 7)$

Using the distributive property, 11 is multiplied by each addend, so  $11 \times (10 + 7) = (11 \times 10) + (11 \times 7)$ .

**1.22**  $18 \times 1 = 1 \times 18$

The commutative property of multiplication is used to change the order of two factors.

**1.23**  $(12 \times 3) \times 8 = 12(3 \times 8)$

The associative property of multiplication is used to change the grouping of two factors.

**1.24**  $8 + 0 = 8$

The additive identity, or zero, can be added to any number without changing the value of that number.

**1.25**  $8 \times (10 + 9)$

The product of 8 and 19 is found by multiplying 8 and 9. To use the distributive property, express 19 as  $10 + 9$ .

$$8 \times 19$$

$$8 \times (10 + 9)$$

- 1.26** ✓ distributive property  
✓ identity property of multiplication

In the first step, Jacques used the distributive property to multiply 1 by each addend in the parentheses. Then, he used the identity property of multiplication to simplify each parentheses.

- 1.27** ✓ associative property of addition  
✓ commutative property of addition

In the first step, Carmen used the commutative property of addition to change the order of the addends in the parentheses. Then, she used the associative property of addition to change the grouping of addends.

## SELF TEST 1

**1.01** true

**1.02** false

The multiplicative identity states that any number multiplied by 1 is the number itself.

**1.03** difference

$$14 - 7 = 7$$

**1.04** dividend

**1.05** 6,907

six thousand: 6,000; nine hundred: 900; seven: 7;  $6,000 + 900 + 7 = 6,907$

**1.06** 15,000

To round 14,883 to the nearest thousands place, consider the digit in the hundreds place. Since eight is larger than five, the four in the thousands place rounds up to five and 883 turns to 000: 15,000.

**1.07** 2,300

$$300 + 2,000 = 2,300$$

**1.08** \$240.00

$$\$130 + \$60 + \$50 = \$240$$

**1.09** \$236.00

$$\$128 + \$63 + \$45 = \$236$$

**1.010** commutative

The commutative property of multiplication states that the order of the factors can change and still result in the same product.

**1.011** associative

The associative property of addition states that the grouping of a sum can change and still result in the same answer.



**1.012** 117

$$9 \times (4 + 9) = (9 \times 4) + (9 \times 9) = 36 + 81 = 117$$

**1.013** commutative property of addition

The commutative property of addition changes the order of the addends.

**1.014**  $(3 \times 8) \times 6 = 3 \times (8 \times 6)$

The associative property of multiplication changes the grouping of the factors.

**1.015**  $6 \times (40 + 2) = (6 \times 40) + (6 \times 2)$

42 is the same as  $(40 + 2)$ . Using the distributive property, April can multiply 6 by each addend.

## SECTION 2

**2.1** a, b, c

**2.2** c, b, a

**2.3**  $4^5$

It can be rewritten with a base of 4 and an exponent of 5.

**2.4**  $8^3$

It can be rewritten with a base of 8 and an exponent of 3.

**2.5**  $1 \times 1 \times 1 \times 1 \times 1$

$1^5$  is the same as multiplying five factors of 1.

**2.6**  $7 \times 7 \times 7 \times 7$

$7^4$  is the same as multiplying four factors of 7.

**2.7** 9

Any base to the power of 1 is just that number.

**2.8** 2,401

$$\begin{aligned} &7 \times 7 \times 7 \times 7 \\ &49 \times 7 \times 7 \\ &343 \times 7 \\ &2,401 \end{aligned}$$

**2.9** 1

1 raised to any power is just 1.

**2.10** 1,024

$$\begin{aligned} &4 \times 4 \times 4 \times 4 \times 4 \\ &16 \times 4 \times 4 \times 4 \\ &64 \times 4 \times 4 \\ &256 \times 4 \\ &1,024 \end{aligned}$$

- 2.11** ✓ It can be read as "six cubed."  
 ✓ It can be read as "six to the power of three."  
 ✓ It has a base of 6.  
 ✓ It is the same as multiplying three factors of 6.

✓ It has an exponent of 3.

- 2.12** ✓ It can be written as a multiplication problem with eight factors of 2.  
 ✓ It has a power of 256.  
 ✓ It can be read as "two raised to a power of eight."  
 ✓ It has a base of 2.

**2.13** b, a, c

**2.14** 81

$$9^2 = 81$$

**2.15** 225

$$5^3 = 125; 8^3 = 512; 9^3 = 729$$

**2.16** 64

$$8^2 = 64; 4^3 = 64$$

**2.17**  $6^3 = 18$

$$6^3 = 216$$

**2.18**  $\sqrt{16} = 8$

$$\sqrt{16} = 4, \text{ not } 8$$

**2.19**  $\sqrt[3]{64} = 8$

$$\sqrt[3]{64} = 4, \text{ not } 8$$

**2.20** c, b, d, a

**2.21** 2

$$2^3 = 8$$

**2.22** 12

$$12^2 = 144$$

**2.23** 2

$$2^2 = 4$$

**2.24** 3

$$3^3 = 27$$

**2.25** 12

$$12^3 = 1,728$$

**2.26** 10

$$10^2 = 100$$

**2.27** b, a

**2.28** true

**2.29** false

Addition and subtraction are completed in the same step from left to right.

**2.30** subtract inside the parentheses

The first step of the order of operations is to simplify inside any parentheses, so subtract inside the parentheses first.

**2.31** simplify  $2^2$

The second step of the order of operations is to simplify any exponents or roots, so simplify  $2^2$  second.

**2.32** 30

$$7 \times 2^2 + (8 - 2) \div 3$$

$$7 \times 2^2 + 6 \div 3$$

$$7 \times 4 + 6 \div 3$$

$$28 + 6 \div 3$$

$$28 + 2 = 30$$

**2.33** Her answer is incorrect. She should have multiplied before adding.

Tracy's answer is incorrect. She should have multiplied 6 and 2 *before* adding 3.

$$3 + 6 \times 2$$

$$3 + 12$$

$$15$$

**2.34** 0

$$25 \div 5 + 7 - (4 \times 3)$$

$$25 \div 5 + 7 - 12$$

$$5 + 7 - 12$$

$$12 - 12 = 0$$

**2.35** 16

$$4^2 - 6 \div 2 + 3$$

$$16 - 6 \div 2 + 3$$

$$16 - 3 + 3$$

$$13 + 3$$

$$16$$

**2.36** 40

$$(11 + 4) \div 3 \times \sqrt{64}$$

$$15 \div 3 \times \sqrt{64}$$

$$15 \div 3 \times 8$$

$$5 \times 8$$

$$40$$

**2.37** 25

$$3^3 + 14 \div 7 - (1 \times 4)$$

$$3^3 + 14 \div 7 - 4$$

$$27 + 14 \div 7 - 4$$

$$27 + 2 - 4$$

$$29 - 4$$

$$25$$

**2.38** 39

The value in the fourth position in the sequence is 39.

**2.39** It starts at 1 and multiplies by 2 repeatedly.

$$1 \times 2 = 2$$

$$2 \times 2 = 4$$

$$4 \times 2 = 8$$

$$8 \times 2 = 16$$

**2.40** It starts at 15 and multiplies by 3 repeatedly.

$$15 \times 3 = 45$$

$$45 \times 3 = 135$$

$$135 \times 3 = 405$$

**2.41** 10, 12, 14, 16, 18, ...

In an arithmetic sequence, the difference between consecutive terms is the same.

$$12 - 10 = 2$$

$$14 - 12 = 2$$

$$16 - 14 = 2$$

$$18 - 16 = 2$$

**2.42** 18, 15, 12, 9, 6

$$18 - 3 = 15$$

$$15 - 3 = 12$$

$$12 - 3 = 9$$

$$9 - 3 = 6$$

**2.43** 12, 60, 300, 1,500, 7,500

$$12 \times 5 = 60$$

$$60 \times 5 = 300$$

$$300 \times 5 = 1,500$$

$$1,500 \times 5 = 7,500$$

**2.44** 14, 7

The sequence starts at 224 and repeatedly divides by 2.

$$28 \div 2 = 14$$

$$14 \div 2 = 7$$

**2.45** 96, 76

The sequence starts at 176 and repeatedly subtracts 20.

$$116 - 20 = 96$$

$$96 - 20 = 76$$

**2.46** 567, 1,701

The sequence starts at 7 and repeatedly multiplies by 3.

$$189 \times 3 = 567$$

$$567 \times 3 = 1,701$$

**2.47** ✓ This is an arithmetic sequence.  
 ✓ The value of the third term is 72.  
 ✓ There are four terms in this sequence.  
 ✓ The sequence starts at 60 and adds 6 repeatedly.

The value of the first term is 60. It is an arithmetic sequence because the difference between each pair of consecutive terms is the same: 6. The sequence starts at 60 and adds 6 repeatedly. There are four terms in the sequence.

**2.48** 59

The sequence starts at 34 and repeatedly adds 25.

$$34 + 25 = 59$$

2.49 68

The sequence starts at 77 and repeatedly subtracts 3.

$$71 - 3 = 68$$

**SELF TEST 2**

2.01 squared

2.02 base

2.03 sometimes

2.04  $4 \times 4 \times 4$ 

2.05 32

$$2 \times 2 \times 2 \times 2 \times 2 = 32$$

2.06 6

$$6^2 = 36$$

2.07 3

$$3^3 = 27$$

2.08 simplify the exponent

Subtract inside the parentheses first.  
Then, simplify the exponent.

2.09 95

$$\begin{aligned} 10^2 - 2(8) + 11 \\ 100 - 2(8) + 11 \\ 100 - 16 + 11 \\ 84 + 11 \\ 95 \end{aligned}$$

2.010 2

$$\begin{aligned} 3 + \sqrt{81} \div 3 - (1 \times 4) \\ 3 + \sqrt{81} \div 3 - 4 \\ 3 + 9 \div 3 - 4 \\ 3 + 3 - 4 \\ 6 - 4 \\ 2 \end{aligned}$$

2.011 91, 88, 85, 82

The first term is 91. To find the other terms, repeatedly subtract 3.

$$\begin{aligned} 91 - 3 &= 88 \\ 88 - 3 &= 85 \\ 85 - 3 &= 82 \end{aligned}$$

**2.012** 80, 160

The sequence starts at 5 and multiplies by 2 repeatedly.

$$40 \times 2 = 80$$

$$80 \times 2 = 160$$

**2.013** 892

The sequence starts at 812 and adds 40 repeatedly.

$$852 + 40 = 892$$

**2.014** true

In an arithmetic sequence, the difference between each pair of consecutive terms is the same.

- 2.015**
- ✓ 64
  - ✓ 49
  - ✓ 144
  - ✓ 4

$$8^2 = 64$$

$$7^2 = 49$$

$$12^2 = 144$$

$$2^2 = 4$$

## SECTION 3

- 3.1**
- ✓ A variable is represented by a letter.
  - ✓ A variable represents a quantity.

**3.2** a, c, d, b

**3.3** Answers will vary. However, students should write out the word "four" and represent k as "a number." Some possibilities include:

- ✓ four added to a number
- ✓ the sum of four and a number
- ✓ four increased by a number
- ✓ four plus a number

**3.4** Answers will vary. However, students should write out the word "eight" and represent h as "a number." Also, the order of the values is important. Some possibilities include:

- ✓ a number divided by eight
- ✓ the quotient of a number and eight

**3.5** a number subtracted from five

The word "from" indicates that the values are switched. So "a number subtracted from five" translates to  $5 - n$ .

**3.6**  $15n$

A number and variable can be written next to each other to show multiplication. The number is always written first.

**3.7**  $y - 5$

To find her age five years ago, subtract five from her current age. So,  $y - 5$ .

**3.8**  $11 - 2x$

**3.9**  $18c$

To find the total cost, multiply 18 doughnuts by the cost of each doughnut. So,  $18c$ .

**3.10**  $n + 21$

**3.11**  $45 \div z$

**3.12** a, b

**3.13** d, c, b, a

**3.14** d, b, a, c

$$xy = 2 \times 4 = 8$$

$$x + z = 2 + 8 = 10$$

$$z - y = 8 - 4 = 4$$

$$x + y + z = 2 + 4 + 8 = 14$$

**3.15** 3

$$x - y^2 = 12 - 3^2 = 12 - 9 = 3$$

**3.16**  $2n$ ; 36

"Product" means to multiply, so  $2n$ .

$2n$

$2 \times 18$

36

**3.17**  $20 - 2n$ 

"Difference" means to subtract, and twice a number can be expressed as  $2n$ .

**3.18** 14

Follow the order of operations.

$20 - 2n$

$20 - 2(3)$

$20 - 6$

14

**3.19** 3

$$h \div 9$$

$$27 \div 9$$

$$3$$

**3.20** 200 miles

$$r \times t$$

$$40 \times 5$$

$$200$$

**3.21** yes

$$l + w + h$$

$$20 + 18 + 11$$

$$49$$

**3.22** multiply the base and the height

Two letters written next to each other indicate that they should be multiplied together.

**3.23** 120 square centimeters

$$bh$$

$$10 \times 12$$

$$120$$

**3.24** true**3.25** 4**3.26**  $17 + 3x$ 

9 and 8 are like terms. They combine to equal 17.

**3.27**  $11n + 12$ 

$4n + 7n$  are like terms. They combine to equal  $11n$ .

**3.28**  $8 + 15m$ 

$14m$  and  $m$  are like terms. They combine to equal  $15m$ .

**3.29**  $15 + 2y$ 

$y$  and  $y$  are like terms. They combine to equal  $2y$

**3.30**  $24x$ 

The product of 8 and 3 is 24.

**3.31**  $80m$ 

The product of 8 and 10 is 80.

**3.32**  $34y$ 

The product of 17 and 2 is 34.

**3.33**  $18p$ 

The product of 6 and 3 is 18.

**3.34**  $3x + 12$ 

$$3 \cdot x + 3 \cdot 4$$

$$3x + 12$$

**3.35**  $9y + 63$ 

$$9 \cdot y + 9 \cdot 7$$

$$9y + 63$$

**3.36**  $2m + 22$

$$\begin{aligned} &2 \cdot m + 2 \cdot 11 \\ &2m + 22 \end{aligned}$$

**3.37**  $150 + 10n$

$$\begin{aligned} &10(15 + n) \\ &10 \cdot 15 + 10 \cdot n \\ &150 + 10n \end{aligned}$$

**3.38** c, a, b

**3.39** The sum of what number and 13 is equal to 21?

**3.40** Eight divided by what number is equal to 8?

**3.41** Answers may vary. Students do not need to solve the equation. Possible answers include:

- ✓ The product of 5 and what number is equal to 35?
- ✓ Five multiplied by what number is equal to 35?
- ✓ What number multiplied by 5 is equal to 35?
- ✓ Five times what number is 35?

**3.42** Answers may vary. Students do not need to solve the equation. The order of the values is important because subtraction is not commutative. Possible answers include:

- ✓ The difference between 22 and what number is equal to 15?
- ✓ What number subtracted from 22 is equal to 15?
- ✓ Twenty-two decreased by what number is equal to 15?
- ✓ Twenty-two minus what number is equal to 15?

**3.43** 15

$$19 - 15 = 4$$

**3.44** 7

$$7 + 20 = 27$$

**3.45** 9

$$45 \div 9 = 5$$

**3.46** 7

$$6 \cdot 7 = 42$$

**3.47** 35

$$35 - 15 = 20$$

**3.48** 6

$$24 + 6 = 30$$

**3.49** 9

$$10 \cdot 9 = 90$$

**3.50** 36

$$36 \div 4 = 9$$

## SELF TEST 3

**3.01** true

**3.02** false

Substitute the value of  $n$  into the expression.

$$n^2$$

$$6^2$$

$$36$$

**3.03** sum

The result of addition is a sum.

**3.04** 3:6

Parentheses, a middle dot, or  $\times$  can be used to show multiplication.

**3.05** a number decreased by seven

**3.06**  $2n + 18$

**3.07** 9

Substitute the values into the expression.

$$b - a$$

$$27 - 18$$

$$9$$

**3.08**  $20 \div n$ ; 4

Quotient means to divide.

$$20 \div n$$

$$20 \div 5$$

$$4$$

**3.09** 135 miles

$$r \cdot t$$

$$45 \cdot 3$$

$$135$$

**3.010**  $3 + 15x$

$8x$  and  $7x$  are like terms, so they may be combined.

**3.011**  $12x$

The product of 4 and 3 is 12. Always write the number first.

**3.012**  $8m + 88$

$$8(m + 11)$$

$$8 \cdot m + 8 \cdot 11$$

$$8m + 88$$

**3.013** The product of 4 and what number is equal to 28?

**3.014** 6

$$28 - 6 = 22$$

**3.015** 81

$$81 \div 9 = 9$$



## SECTION 4

4.1 b a, c

4.2 228,000

The 7 is in the thousands place. The digit to the right of it is greater than 5, so round 7 up to 8 and change the rest of the digits to zeroes.

4.3 \$265.00

Add the amounts together.  
 $38 + 187 + 40 = 265$

4.4  $8 \times 4 = 4 \times 8$ 

With the commutative property, the order of two factors can be changed without changing the value of the product.

4.5 \$15.00

Marcos spent a total of \$265.00. Subtract that amount from \$280.00.  
 $280 - 265 = 15$

4.6 34

The sequence starts at 48 and repeatedly subtracts 7.  
 $41 - 7 = 34$

4.7 10

4.8 1

$$9 + \sqrt{81} - 4 \times 2$$

$$9 + 9 - 4 \times 2$$

$$9 + 9 - 8$$

$$18 - 8$$

$$10$$

$$1^3 = 1 \times 1 \times 1 = 1$$

4.9 625

$$5 \times 5 \times 5 \times 5$$

$$25 \times 5 \times 5$$

$$125 \times 5$$

$$625$$

4.10 the quotient of a number and five

4.11 12

$$7 \cdot 12 = 84$$

4.12  $72 + 8w$ 

$$8 \cdot 9 + 8 \cdot w$$

$$72 + 8w$$

4.13 44

Two letters written next to each other means to multiply.

$$ab$$

$$11 \cdot 4$$

$$44$$

## LIFEPAC TEST

1. false

14,688 rounded to the nearest ten is 14,690.

2. true

3. square and cube

$$8^2 = 64; 4^3 = 64$$

4. 2,800

1,841 rounds to 1,800  
964 rounds to 1,000  
 $1,800 + 1,000 = 2,800$

5. 21

$$42 \div 2 = 21$$

6. 4,680

7. associative property of addition

The associative property of addition is illustrated. The grouping of addends can be changed without changing the value of the sum.

8.  $11^4$ 

9. multiply

10. The sequence starts 2 and multiplies by 3 repeatedly.

$$\begin{aligned} 2 \times 3 &= 6 \\ 6 \times 3 &= 18 \\ 18 \times 3 &= 54 \end{aligned}$$

11.  $120 \text{ cm}^3$ 

$$\begin{aligned} lwh \\ 4 \times 5 \times 6 \\ 20 \times 6 \\ 120 \end{aligned}$$

12.  $15x + 7$ 

Because  $x$  and  $14x$  are like terms, they can be combined to equal  $15x$ .

13. 14

$$\begin{aligned} n + 11 \\ 3 + 11 \\ 14 \end{aligned}$$

14.  $8y + 96$ 

$$\begin{aligned} 8(y + 12) \\ 8 \cdot y + 8 \cdot 12 \\ 8y + 96 \end{aligned}$$

15.  $x = 20$ 

$$20 - 5 = 15, \text{ so } x = 20.$$

16. c, a, d, b

17. 243

$$3 \times 3 \times 3 \times 3 \times 3 = 243$$

18. 12

$$12^2 = 144, \text{ so } \sqrt{144} = 12$$

19. 82

$$\begin{aligned} 7^2 - 3 + 9 \times 8 \div 2 \\ 49 - 3 + 9 \times 8 \div 2 \\ 49 - 3 + 72 \div 2 \\ 49 - 3 + 36 \\ 46 + 36 \\ 82 \end{aligned}$$

20. 16

The sequence starts at 28 and subtracts 3 repeatedly.  
 $19 - 3 = 16$

## ALTERNATE LIFE PAC TEST

1. false

7,945 rounded to the nearest hundred is 7,900

2. true

3. cube

$$2^3 = 8$$

4. 470

371 rounds to 370.  
97 rounds to 100.  
 $370 + 100 = 470$ .

5. 6

$$18 \div 3 = 6$$

6. 3,540

7. commutative property of addition

With the commutative property of addition, the order of addends can be changed without changing the value of the sum.

8.  $12^4$

9. divide

10. Starts at 64 and divides by 2 repeatedly.

$$64 \div 2 = 32$$

$$32 \div 2 = 16$$

$$16 \div 2 = 8$$

11.  $80 \text{ in.}^3$

$$lwh$$

$$2 \times 8 \times 5$$

$$16 \times 5$$

$$80$$

12.  $6y + 9$

5y and y are like terms, so they can be combined to equal 6y.

13. 7

$$x - 7$$

$$14 - 7$$

$$7$$

14.  $4n + 44$

$$4(n + 11)$$

$$4 \cdot n + 4 \cdot 11$$

$$4n + 44$$

15.  $n = 5$

$$5 + 12 = 17, \text{ so } n = 5.$$

16. c, b, a, d

17. 256

$$4 \times 4 \times 4 \times 4 = 256$$

18. 11

$$11^2 = 121, \text{ so } \sqrt{121} = 11$$

19. 18

$$3^3 + 11 - 10 \div 2 \times 4$$

$$27 + 11 - 10 \div 2 \times 4$$

$$27 + 11 - 5 \times 4$$

$$27 + 11 - 20$$

$$38 - 20$$

$$18$$

20. 21

The sequence starts with 5 and adds 4 repeatedly.  
 $17 + 4 = 21$

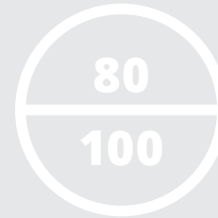
# MATH 601

## ALTERNATE LIFEPAC TEST

**NAME** \_\_\_\_\_

**DATE** \_\_\_\_\_

**SCORE** \_\_\_\_\_



**Answer true or false** (each answer, 1 point).

- \_\_\_\_\_ The number 7,945 rounded to the nearest hundred is 7,950.
- \_\_\_\_\_ The multiplicative identity is 1.

**Write the letter of the correct answer on the line** (each answer, 2 points).

- The number 8 is a perfect \_\_\_\_\_.  
 a. square and cube    b. cube    c. square
- Round each number to the nearest ten and estimate the sum.  
 $371 + 97$   
 a. 480    b. 470    c. 460    d. 450
- During a basketball game, the South Middle School Jets scored 18 points from three-point baskets. How many three-point baskets did they make?  
 a. 6    b. 9    c. 18    d. 54
- Find the product.  
 $236 \times 15$   
 a. 3,240    b. 3,440    c. 3,540    d. 1,416
- Which property is illustrated?  
 $18 + 9 = 9 + 18$   
 a. distributive property    b. associative property of addition  
 c. identity property of addition    d. commutative property of addition
- Represent the following expression using an exponent.  
 $12 \times 12 \times 12 \times 12$   
 a.  $12^4$     b.  $1^4$     c.  $4^{12}$     d.  $1^{12}$
- Which operation would be completed second in the following expression?  
 $3^3 + 11 - 10 \div 2 \times 4$   
 a. simplify the exponent    b. add  
 c. divide    d. multiply

10. Describe this sequence.  
64, 32, 16, 8, ...
- a. Starts at 64 and subtracts 32 repeatedly.    b. Starts at 64 and divides by 2 repeatedly.  
c. Starts at 8 and multiplies by 2 repeatedly.    d. Starts at 32 and subtracts 16 repeatedly.
11. The volume of a rectangular box can be found using the formula  $lwh$  where  $l$  represents the length,  $w$  represents the width, and  $h$  represents the height of the box. What is the volume of a box with the following dimensions?  
 $l = 2$  inches  
 $w = 8$  inches  
 $h = 5$  inches
- a.  $285 \text{ in.}^3$                       b.  $21 \text{ in.}^3$                       c.  $80 \text{ in.}^3$                       d.  $15 \text{ in.}^3$
12. Simplify.  
 $(5y + 9) + y$
- a.  $6y + 9$                       b.  $14 + y$                       c.  $14y$                       d.  $15y$
13. Evaluate  $x - 7$  for  $x = 14$ .
- a. 2                      b. 7                      c. 21                      d. 147
14. Simplify using the distributive property.  
 $4(n + 11)$
- a.  $4n + 11$                       b.  $15n$                       c.  $44 + n$                       d.  $4n + 44$
15. What is the solution to the equation  $n + 12 = 17$ ?
- a.  $n = 29$                       b.  $n = 5$                       c.  $n = 3$                       d.  $n = 27$

**Match these items** (each answer, 2 points).

16. \_\_\_\_\_  $2x$                       a. two decreased by a number  
\_\_\_\_\_  $k + 2$                       b. the sum of a number and two  
\_\_\_\_\_  $2 - n$                       c. twice a number  
\_\_\_\_\_  $d \div 2$                       d. a number divided by two

**Fill in each blank with the correct answer** (each answer, 2 points).

17.  $4^4 =$  \_\_\_\_\_
18.  $\sqrt{121} =$  \_\_\_\_\_
19.  $3^3 + 11 - 10 \div 2 \times 4 =$  \_\_\_\_\_
20. 5, 9, 13, 17, \_\_\_\_\_



804 N. 2nd Ave. E.  
Rock Rapids, IA 51246-1759

800-622-3070  
[www.aop.com](http://www.aop.com)

MAT0620 – Apr '15 Printing

ISBN 978-0-7403-3476-4



9 780740 334764