# $0 \%$ <br>  <br> Good and Beautiful <br>  <br> ANSWER <br> <br> ๕KEY ๕. 

 <br> <br> ๕KEY ๕.}

Goud Becautiful


## Math 6 Answer Key

Book 1 Answer Key ..... 1
Book 2 Answer Key ..... 93


матн 6

. If the number is an integer, write "yes" on the line. If not, write "no."

$$
\begin{array}{rrrrr}
7 \text { yes } & -40 \text { yes } & 0 \text { yes } & \frac{4}{5} \text { no } \\
5.1 \begin{array}{l}
\text { no } \\
\hline \text { no }
\end{array} & \frac{1}{3} & -8.4 \begin{array}{l}
\text { no } \\
\hline
\end{array}
\end{array}
$$

2. Write each of the expressions as an integer. Some examples are given.

| a loss of \$2,000 | $\underline{-2,000}$ | 500 ft below sea level | -500 |
| :---: | :---: | :---: | :---: |
| a drop of $15{ }^{\circ} \mathrm{F}$ | -15 | a debt of \$10 | -10 |
| a price increase of \$60 | 60 | a deposit of \$50 | 50 |
| 125 ft above sea level | 125 | a withdrawal of \$50 | -50 |
| 30 degrees below zero | -30 | a gain of \$45 | 45 |

3. Find the opposite of each number. Use the number line for help if necessary.


| Number | Opposite | Number | Opposite |
| :---: | :---: | :---: | :---: |
| 4 | -4 | 12 | -12 |
| 7 | -7 | -12 | 12 |
| -2 | 2 | -5 | 5 |
| -1 | 1 | 8 | -8 |
| 0 | 0 | 3 | -3 |

4. Find the absolute value of each number.

| $\|450\|$ | 450 | $\|-22\|$ | 22 | $\|0\|$ | 0 | $\|-108\|$ | 108 |
| :--- | :---: | :--- | :--- | :--- | :--- | :--- | :--- |
| $\|15\|$ | 15 | $\|-15\|$ | 15 | $\|-3\|$ | 3 | $\|18\|$ | 18 |

5. Find the change from the first temperature to the second. Write the change as an integer.
$5^{\circ} \mathrm{F}$ to $15^{\circ} \mathrm{F} \quad 10$
$-50^{\circ} \mathrm{F}$ to $-25^{\circ} \mathrm{F} \quad 25$
$0^{\circ} \mathrm{F}$ to $-15^{\circ} \mathrm{F} \underline{-15}$
$-10^{\circ} \mathrm{F}$ to $-35^{\circ} \mathrm{F}-25$
$25^{\circ} \mathrm{F}$ to $15^{\circ} \mathrm{F} \underline{-10}$
$-5^{\circ} \mathrm{F}$ to $15^{\circ} \mathrm{F} \quad \underline{20}$
6. Compare the following using $<,>$, or $=$.
$|0| \odot|-5| \quad 7 \otimes|2| \quad|-4| \ominus|4|$
$|5| \otimes 7$
$|-15| \otimes|-23|$
$32 \otimes|-30|$
7. Cross off the incorrect absolute values.
$|-15|=15$

$|5|=5$




Book I • Math 6 Answer Key • 2

## > Mini Lesson

A prime number is a whole number that has exactly two factors: the number itself and the number 1. Examples: 5, 13, 67

A composite number is a whole number that has more than two factors. Examples: 6, 27, 81

A factor pair is two factors of a number whose product is the given number; numbers in a factor pair are referred to as factors of the given number. Example: A factor pair of 46 is 2 and 23 .

Prime factorization is a number written as the product of its prime factors. For example, the prime factorization of 60 can be written as $2 \times 2 \times 3 \times 5$ or $2^{2} \times 3 \times 5$.

A factor tree is a diagram used to identify the prime factors of a composite number.
Example: Use a factor tree to find the prime factors of 450 .
Start by writing the number you are factoring at the top.
(2) 225 until every factor is a prime number.
$450=2 \times 3^{2} \times 5^{2} \quad \begin{aligned} & \text { Write the prime factors (the circled numbers) as } \\ & \text { a multiplication problem in order from least to }\end{aligned}$ a multiplication problem in order from least to
greatest, using exponents when a factor repeats

To check your work, multiply the prime factors. The product should equal the number you started with. $2 \times 3^{2} \times 5^{2}=2 \times 9 \times 25=450$

## Practice

I. Circle the composite numbers in each set.
$\{2,7,(12) 17$, (22) (27)
$\{1,3,5,7,9,11,13\}$
$\{5$, (10) (15) (20) (25) (30)
(4.) 11,19, (26) (33) (40)
$\{7$, (16) (25) (34), 43, (52)
$\{0,11$, (22) (33) (44) (55)
2. Write all the prime numbers between 1 and 50 .

$$
\begin{aligned}
& 2 \\
& 23 \\
& 23
\end{aligned}, \frac{3}{29}, \frac{7}{31}, \frac{11}{37}, \frac{13}{41}, \frac{17}{43}, \frac{47}{4},
$$

3. Cross out the numbers below that are divisible by ALL of these numbers: $2,3,4,5,6,9$, and 10 .

| 1,242 | 750 | 18800 | 3,636 |
| :---: | :---: | :---: | :---: |
| 5,yer | 140,600 |  | $118140$ |



MATH 6 O


I. Determine the property shown by each statement. Then write the first letter(s) of that property on the line under the statement.
$\underline{\text { Associative property I Commutative property I Distributive property }}$
IDentity property I INverse property

| $42 \cdot 1=42$ | $9+14=14+9$ | $6(8+7)=6 \bullet 8+6 \bullet 7$ |
| :---: | :---: | :---: |
| ID | C | D |
| $-24+24=0$ | $37 \cdot 2=2 \cdot 37$ | $(5+3)+10=5+(3+10)$ |
| IN | C | A |
| $11+0=11$ | $(2 \cdot 6) 3=2(6 \cdot 3)$ | $7(16-8)=7 \cdot 16-7 \cdot 8$ |
| ID | A | D |
| $\frac{5}{8} \cdot \frac{8}{5}=1$ |  |  |
| IN |  |  |

2. Use the associative property to rewrite and complete each problem. The first one is given as an example.
$5(12 \bullet 8)=(5 \cdot 12) 8=60 \bullet 8=480$
$(9+38)+2=9+(38+2)=9+40=49$
$(8 \cdot 15) 2=8(15 \cdot 2)=8(30)=240$
$23+(57+18)=(23+57)+18=80+18=98$
3. Use the commutative property to complete each problem
$\uparrow$ Hint: Rearrange the numbers to make the problems easier to complete. $7+19+23=49 \quad 18+34+52=104$
$6 \bullet 3^{2} \cdot 5=270 \quad 2^{3} \cdot 20 \bullet 5=800$
4. Use the distributive property to complete each problem. $11(9+8)=187$
$12(40-12)=336$
$(12+11) 7=161$
5. Use the identity property to fill in the blanks. Then complete the problems.

$$
\begin{array}{lll}
54 \cdot \frac{1}{2}=54 & 8 \frac{2}{9}+\frac{0}{2}=8 \frac{2}{9} & -\frac{1}{3}+\underline{0}=-\frac{1}{3} \\
-67 \cdot \underline{1}=-67 & 4,284.9+0=\underline{4,284.9} & \frac{11}{25} \bullet 1=\underline{\frac{11}{25}} \\
-80,591 \cdot 1=\begin{array}{ll}
-80,591 & -16.803+0=
\end{array} \\
\hline-16.803
\end{array}
$$

6. Write the opposite of each number.
$8.7-8.7$
$-90 \quad 90$
$-\frac{4}{5} \xrightarrow{\frac{4}{5}}$
$6 \frac{8}{9} \underline{-6 \frac{8}{9}}$
7.93-7.93
$-0.5104 \underline{0.5104}$


7. Combine like terms to simplify the expressions. The first is given as an example.

| $a+a+a$ | $3 a$ |
| :--- | :---: |
| $+g+g+g$ | $\boxed{4 g}$ |
| $r+r+r+r+r+r$ | $\boxed{6 r}$ |
| $m+m$ | $\underline{2 m}$ |
| $x+x+x+x+x$ | $-5 x$ |

3. Draw lines to connect equivalent expressions

4. Simplify the expressions.

| $8 y+2 y$ | $10 y$ | $5 x+3 x$ | $8 x$ |
| :---: | :---: | :---: | :---: |
| $-7 v+12 v+4$ | $5 v+4$ | $6 t+2+5 t-3$ | $11 t-1$ |
| $9 z-4+8$ | $9 z+4$ | $20 u-19 u-2$ | $u-2$ |
| $w+3 w+4 w$ | $8 w$ | $6+7 p-4$ | $7 p+2$ |

5. Rewrite the expressions so like terms are next to each other. Then simplify the expressions. The first one is given as an example.
The order of the terms will vary, but like terms will be next to each other

| $3 x+4 y+5 x=$ | $3 x+5 x+4 y$ | $8 x+4 y$ |
| :---: | :---: | :---: |
| $a+3 b+2 a-b=$ | $a+2 a+3 b-b$ | $3 a+2 b$ |
| $8 d+9 c-3 d=$ | $9 c+8 d-3 d$ | $9 c+5 d$ |
| $11 p+4 s-s+p=$ | $11 p+p+4 s-s$ | $12 p+3 s$ |
| $7-6 h+g+2 h=$ | $g-6 h+2 h+7$ | $g-4 h+7$ |
| $4 k+r+3 k-2 k=$ | $4 k+3 k-2 k+r$ | $5 k+r$ |

6. Fill in the blanks to make equivalent expressions.

$$
\begin{array}{ll}
2 t+\underline{4 t}=6 t & -3 s+5+\underline{7 s}=4 s+5 \\
4 p+5 p+\underline{3 p}=12 p & q+7 r-\_r+2 q=3 q+6 r
\end{array}
$$

(1)



матн 6

## Practice

I. Use the distributive property to simplify each expression. The first one is given as an example. Remember to combine like terms.

| $9(10 x+9)$ | $90 x+81$ |
| :---: | :---: |
| $18(2+3 y)$ | $36+54 y$ |
| $12(9 c-4+11 c)$ | $240 c-48$ |
| $\frac{1}{2}(12+38 x)$ | $6+19 x$ |
| $\frac{1}{3}(69 y-18)$ | $23 y-6$ |
| $5(9 z+5-3 z+4)$ | $30 z+45$ |

2. Find the GCF of the factors in each expression. Then use the GCF to factor each expression. The first one is given as an example.

| $26 d+39$ | GCF: 13 | 13 ( 2d |
| :---: | :---: | :---: |
| $99 f+77$ | GCF: 11 | $11(9 f+\ldots$ |
| $84+16 \mathrm{~g}$ | GCF: | $4(21+\ldots$ 4g |
| $500 h+200$ | GCF: 100 | $100(5 h+2$ |
| $72+30 j$ | GCF: $\quad 6$ | $6(12+5 j)$ |

3. Factor each expression.

| $3 k+6$ | $3(k+2)$ |
| :--- | :---: |
| $25 m+15$ | $5(5 m+3)$ |
| $9 n+27$ | $9(n+3)$ |
| $16+24 p$ | $8(2+3 p)$ |

4. Match the equivalent expressions in the table using patterns (stripes, polka dots, etc.) and/or colors. The first one is given as an example.


－Watch the video lesson and／or read the mini lesson．


## Video Lesson

## 回至回 Scan the QR code or watch the video lesson on

 goodandbeautiful．com／Math6．| $x$ | $y$ |
| :---: | :---: |
| -1 | $3(-1)-2=-5$ |
| 0 | $3(0)-2=-2$ |
| 1 | $3(1)-2=1$ |
| 2 | $3(2)-2=4$ |

ordered pairs：
$(-1,-5) \quad(0,-2)$
$(1,1) \quad(2,4)$


## Mental Math Checkup

I．Count down by $\frac{1}{4}$ from $8^{\frac{1}{4}}$ to 6 ．

$$
8 \frac{1}{4}, 8,7 \frac{3}{4}, 7 \frac{1}{2}, 7 \frac{1}{4}, 7,6 \frac{3}{4}, 6 \frac{1}{2}, 6 \frac{1}{4}, 6
$$

2．Find each percent．
What is $300 \%$ of 5 ？ 15
What is $300 \%$ of 50 ？ 150
3．Multiply or divide．
$1,000 \div 50=20 \quad 2,100 \bullet 4=8,400$

MATH 6 Q

## Practice

I．Complete each input－output table．Then list the ordered pairs from each table on the lines below the table．
$y=x-4$

| $x$ | $y$ |
| :---: | :---: |
| -1 | -5 |
| 0 | -4 |
| 1 | -3 |
| 2 | -2 |

$(-1,-5) \quad(0,-4)$
$(1,-3) \quad(2,-2)$

| $y=3 x$ |  |
| :---: | :---: |
| $x$ $y$ <br> -1 -3 <br> 0 0 <br> 1 3 <br> 2 6 |  |

$$
(-1,-3) \quad(0,0)
$$

$(1,3)$

2．Graph the equations from Problem 1 on the coordinate planes below．



3．Use the equation $y=-3 x-5$ to answer the questions．
What is the $y$－value when $x$ is 8 ？-29
What is the $y$－value when $x$ is $-3 ?$


4．Complete each input－output table．For each table，plot the ordered pairs on the graph on the next page and connect the points from the table to form a line．Use a ruler to extend each line to the edge of the graph．Each line will go through one of the triangles， which represent the tallest mountain summit on each continent in the world．Using the key at the bottom，write the name of the mountain on the line under each table．Once the names are written in the blanks，the mountains will be in order from tallest to shortest．

| 1．$y=5 x-37$ |  | 2．$y=-4 x+21$ |  | 3．$y=x$ |  |  | 4．$y=0.5 x+4$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $x$ | $y$ | $x$ | $y$ |  | $x$ | $y$ | $x$ | $y$ |
| 6 | －7 | 3 | 9 |  | －5 | －5 | －8 | 0 |
| 7 | －2 | 4 | 5 |  | 0 | 0 | 0 | 4 |
| 8 | 3 | 6 | －3 |  | 5 | 5 | 4 | 6 |
| Mt． <br> Everest |  | Mt． <br> Aconcagua |  | Mt． <br> Denali |  |  | Mt． <br> Kilimanjaro |  |
| 5．$y=3 x-9$ |  | 6．$y=-x$ |  | 7．$y=-3 x+6$ |  |  | Aconcagua |  |
| $x$ | $y$ | $x$ | $y$ |  | $x$ | $y$ | $\triangle$ Vin |  |
| 0 | －9 | －8 | 8 |  | 0 | 6 | $\triangle$ K | uszko |
| 2 | －3 | 0 | 0 |  | 2 | 0 | $\triangle$ Kil | ajaro |
| 4 | 3 | 8 | －8 |  | 4 | －6 | $\triangle$ Ev |  |
| Mt． <br> Elbrus |  | Mt． <br> Vinson |  | Mt． <br> Kosciuszko |  |  | $\triangle$ Denali |  |
|  |  | $\triangle$ Elbrus |  |  |  |




## Preventing Errors

- Read the manual and/or reference card and practice using the calculator.
- Estimate the answer before entering a problem.
- Complete the problem on paper first and simply use the calculator to check your answer.
- Enter the calculations twice and make sure you get the same answer both times
- Check that the answer displayed on the calculator is reasonable

For example, consider the problem 6,258 $\div 70$. First, round 6,258 to 6,300 because you can calculate $6,300 \div 70$ mentally. The answer should be close to 90 . Now complete the problem by hand in the space below:

$$
\begin{gathered}
70 \lcm{6258.4} \\
-560 \\
\hline 658 \\
-630 \\
\hline 280 \\
\frac{-280}{0}
\end{gathered}
$$

If you have access to a calculator, enter the problem by pressing the keys below. Notice that a comma is not typed.


Write the answer displayed on the calculator: 89.4
Is the displayed answer the same as your answer above? If not, check whether one answer is more reasonable than the other. Try entering the problem in the calculator again. If you get the same answer on the calculator twice, check your written work for errors.

!
Basic/Standard/4-Function calculators often DO NOT follow the order of operations. Instead, they perform all operations in the order that you enter them.

For example, suppose that Otis entered a problem into two different calculators and got two different answers.

$$
\text { Calculator A: } 3+5 \bullet 9=72
$$

Calculator B: $3+5 \bullet 9=48$
If you have access to a calculator, check whether your calculator is programmed to follow the order of operations by typing in the same problem that Otis did. Here are the keys to press:

## 3-5 $\times 9$ -

Write the answer displayed on your calculator: Answers will vary.
Now complete the problem by hand here. Be sure to use the order of operations.

$$
3+5 \bullet 9=48
$$

Based on the order of operations, 48 is the correct answer because multiplication is performed before addition.
If your calculator showed 72 as the answer, the calculator is NOT following the order of operations. Instead, it is performing calculations in the order they are typed. You'll need to use parentheses when entering calculations or enter them in the order specified by the order of operations, like this:


If your calculator did not follow the order of operations, try one of the above methods and see if you now get the correct answer of 48



