# Answer Key For The California Mathematics Standards 

## Grade 3

## Introduction: Summary of Goals

## GRADE THREE

By the end of grade three, students deepen their understanding of place value and their understanding of and skill with addition, subtraction, multiplication, and division of whole numbers. Students estimate, measure, and describe objects in space. They use patterns to help solve problems. They represent number relationships and conduct simple probability experiments.

## Answer Key For The California Mathematics Standards

## Grade 3

Number Sense 1.0: Students understand the place value of whole numbers.

## NS 1.1a: Students count, read, and write whole numbers to 10,000

a Circle the number two thousand, five hundred sixteen:
$1,244 \quad 1,424 \quad 2,651 \quad$ '2,516; 216
b. Circle the number one thousand, one:
101 1,1,001; $1,010 \quad 1,100$
c. Circle the number nine thousand, four hundred:

9,004

Number Sense 1.0: Students understand the place value of whole numbers.
NS 1.1b: Students count, read, and write whole numbers to 10,000
a. Write the following numbers:

1. three thousand, six hundred twenty-four
2. six thousand, forty-three
3. eight thousand, two
b. What is the next counting number after 9,999 ?

3,624 6,043
8,002
10,000

## Answer Key For The California Mathematics Standards

## Grade 3

Number Sense 1.0: Students understand the place value of whole numbers.
NS 1.2: Students compare and order whole numbers to 10,000.

Write these numbers in order, beginning with the smallest:
8,201
8,012
8,102
812
812 8,012
8,102
8,201

Number Sense 1.0: Students understand the place value of whole numbers.
NS 1.3: Students identify the place value for each digit in numbers to 10,000.

In 6,934 there are:

thousands
 ones
 tens
9 hundreds


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## Grade 3

Number Sense 1.0: Students understand the place value of whole numbers.
NS 1.4: Students round off numbers to 10,000 to the nearest ten, hundred, and thousand.
a. Round off 3,465 to the nearest hundred:
b. Round off 3,465 to the nearest thousand:

3,000

Number Sense 1.0: Students understand the place value of whole numbers.
NS 1.5: Students use expanded notation to represent numbers (e.g., 3,206 = 3,000 + 200 + 6).
a. Write the expanded notation for 8,256 :

$$
8,256=8,000+200+50+6
$$

b. Write the number that goes in the blank:

$$
2,000+700+30+9=2,739
$$

## Answer Key For The California Mathematics Standards

## Grade 3

Number Sense 2.0: Students calculate and solve problems involving addition, subtraction, multiplication, and division.
NS 2.1: Students find the sum or difference of two whole
numbers between 0 and 10,000.

Solve these problems:
a. 591
b. 1,283
c. 3,215
d. 300
+87
+678
6,074
$+7,357$
$\begin{array}{r}-2,806 \\ \hline 409\end{array}$
$\begin{array}{r}-27 \\ -273 \\ \hline\end{array}$

## Answer Key For The California Mathematics Standards

## Grade 3

Number Sense 2.0: Students calculate and solve problems involving addition, subtraction, multiplication, and division.
NS 2.2: Students memorize to automaticity the multiplication tables for numbers between 1 and 10.

Allow students three minutes to do these problems

| 8 | 2 | 1 | 5 | 2 | 1 | 3 | 2 | 7 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{r}81 \\ \hline\end{array}$ | $\times 7$ | +6 | $\times 1$ | +4 | +4 | +2 | $\times 2$ | $\times 1$ | +3 |
| 8 | 14 | 6 | 5 | 8 | 4 | 6 | 4 | 7 | 3 |
| 4 | 7 | 9 | 6 | 2 | 3 | 8 | 4 | 1 | 2 |
| $\times 1$ | $\times 3$ | $\times 1$ | $\times 2$ | $\times 2$ | $\times 3$ | +1 | $\times 2$ | $\times 5$ | $\times 1$ |
| 4 | 21 | 9 | 12 | 4 | 9 | 8 | 8 | 5 | 2 |
| 5 | 2 | 4 | 2 | 9 | 3 | 7 | 3 | 2 | 1 |
| $\times 2$ | +88181 | +4 | +6 | +2 | +3 | $\times 2$ | $\times 5$ | $\times 5$ | +7 |
| 10 | 16 | 16 | 12 | 18 | 9 | 14 | 15 | 10 | 7 |


| 2 | 3 | 7 | 3 | 3 | 2 | 2 | 3 | 4 | 3 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +9 | $\times 7$ | $\times 5$ | + 9 | +66 | $\times 7$ | $\times 4$ | $\times 4$ | $\times 5$ | $\times 7$ |
| 18 | 21 | 35 | 27 | 18 | 14 | 8 | 12 | 20 | 21 |



| 4 | 5 | 7 | 4 | 5 | 6 | 9 | 6 | 4 | 7 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| +7 | +9 | $\times 3$ | +6 | $\times 7$ | +5 | $\times 8$ | +4 | +9 | +4 |
| 28 | 45 | 21 | 24 | 35 | 30 | 72 | 24 | 36 | 28 |

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## Answer Key For The California Mathematics Standards

## Grade 3

Number Sense 2.0: Students calculate and solve problems involving addition, subtraction, multiplication, and division.
NS 2.2: Students memorize to automaticity the multiplication tables for numbers between 1 and 10.

## [CONTINUED]

| 7 | 7 | 6 | 7 | 6 | 9 | 6 | 7 | 6 | 8 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\times 7$ | $\times 6$ | +8 | $\underline{\times 9}$ | +6 | $\times 7$ | +88 | +88 | $\times 7$ | +7 |
| 49 | 42 | 48 | 63 | 36 | 63 | 48 | 56 | 42 | 56 |
| 8 | 8 | 8 | 9 | 8 | 8 | 9 | 8 | 9 | 9 |
| $\times 3$ | +9 | $\times 5$ | $\times 3$ | +4 | +8 | +4 | $\times 6$ | $\times 5$ | +6 |
| 24 | 72 | 40 | 27 | 32 | 64 | 36 | 48 | 45 | 54 |

## Answer Key For The California Mathematics Standards

## Grade 3

Number Sense 2.0: Students calculate and solve problems involving addition, subtraction, multiplication, and division.
NS 2.3: Students use the inverse relationship of multiplication and division to compute and check results.

Here is a problem. Use multiplication to see if it is solved correctly. Show your work.

5 \begin{tabular}{|c|c|}
\hline 29 <br>
135

$\quad 29 \times 5=135 ? \quad$

29 <br>
$\times 5$ <br>
145

$\quad$

The <br>
problem is <br>
not solved <br>
correctly
\end{tabular}

Number Sense 2.0: Students calculate and solve problems involving addition, subtraction, multiplication, and division.

## NS 2.4: Students solve simple problems involving multiplication of multidigit numbers by one-digit numbers $(3,671 \times 3=$ <br> $\qquad$

Solve these problems:
a.

| 465 |
| ---: |
| $\times \quad 3$ |
| 1,395 |

b.

c.
3482

17,410

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Number Sense 2.0: Students calculate and solve problems involving addition, subtraction, multiplication, and division.
NS 2.5: Students solve division problems in which a multidigit number is evenly divided by a one-digit number ( $135 \div 5=\ldots$ ).

Solve these problems:
a.

b. $4 \longdiv { 2 6 4 }$
b. $4 \longdiv { 2 6 4 }$
c.


Number Sense 2.0: Students calculate and solve problems involving addition, subtraction, multiplication, and division.
NS 2.6: Students understand the special properties of 0 and 1 in multiplication and division.

Check true or false:
a. $24 \times 0=24$
 True $\square$ False
b. $19 \div 1=19$
c. $63 \times 1=63$ True $\qquad$ False
d. $0 \div 0=1$
$\qquad$

True $\square$ False

## Answer Key For The California Mathematics Standards

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Number Sense 2.0: Students calculate and solve problems involving addition, subtraction, multiplication, and division.
NS 2.7: Students determine the unit cost when given the total cost and number of units.

Jill bought 6 pounds of apples for $\$ 1.38$. How much did each pound cost? 23 cents
23
$6 \lcm{\$ 1.38}$

Number Sense 2.0: Students calculate and solve problems involving addition, subtraction, multiplication, and division.
NS 2.8: Students solve problems that require two or more of the skills mentioned above.
a. You put 54 marbles into 6 bags, ending up with the same number of marbles in each bag. How many marbles would be in each bag if there were 6 bags?

9 marbles

b. A tree was planted 54 years before 1961. How old was that tree in 1997? 90 years

$$
1997-1961=36 \text { years } \quad 54 \text { years }+36 \text { years }=90 \text { years }
$$

## Answer Key For The California Mathematics Standards

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Number Sense 3.0: Students understand the relationship between whole numbers, simple fractions, and decimals.
NS 3.1: Students compare fractions represented by drawings or concrete materials to show equivalency and to add and subtract simple fractions in context (e.g. $1 / 2$ of a pizza is the same amount as $2 / 4$ of another pizza that is the same size; show that $3 / 8$ is larger than $\frac{1}{4}$ ).

Fill in parts to show each fraction. Then circle the fractions that are equivalent.

$\frac{1}{4}$

$\frac{2}{4}$

Number Sense 3.0: Students understand the relationship between whole numbers, simple fractions, and decimals.
NS 3.2: Students add and subtract fractions (e.g., determine that $1 / 8+3 / 8$ is the same as $1 / 2$.

$\frac{3}{8}+\frac{2}{8}=\frac{3+2}{8}=\frac{5}{8}$

## Answer Key For The California Mathematics Standards

## Grade 3

Number Sense 3.0: Students understand the relationship between whole numbers, simple fractions, and decimals.
NS 3.3: Students solve problems involving addition, subtraction, multiplication, and division of money amounts in decimal notation and multiply and divide money amounts in decimal notation by using whole-number multipliers and divisors.
a. $\$ 3.24+\$ .35=\$ 3.59$
b. You have $\$ 8.00$. You buy 2 oranges and 3 juices. Each orange costs $\$ 0.35$ and each juice costs $\$ 0.90$. How much do you have left? \$4.60

| $2 \times \$ 0.35=\$ 0.70$ | $\$ 0.70$ | $\$ 8.00$ |
| ---: | ---: | ---: |
| $3 \times \$ 0.90=\$ 2.70$ | $+\$ 2.70$ | $-\$ 3.40$ |
|  | $\$ 3.40$ | $\$ 4.60$ |

## Answer Key For The California Mathematics Standards

## Grade 3

Number Sense 3.0: Students understand the relationship between whole numbers, simple fractions, and decimals.
NS 3.4: Students know and understand that fractions and decimals are two different representations of the same concept (e.g. 50 cents is $1 / 2$ of a dollar, 75 cents is $3 / 4$ of a dollar).
a. $\frac{1}{2}$ dollar $=50$ cents.
b. 75 cents is $\frac{3}{4}$ of a dollar

Algebra and Functions 1.0: Students select appropriate symbols, operations, and properties to represent, describe, simplify, and solve simple number relationship. AF 1.1: Students represent relationships of quantities in the form of mathematical expressions, equations, or inequalities.

Write an equation to solve this problem, and then solve the equation. An oak tree is 42 feet high. The oak tree is 18 feet taller than the fir tree. How tall is the fir tree?
$\left.\begin{array}{l}\qquad \begin{array}{l}t=\text { height of oak tree }=42 \mathrm{ft} \\ f\end{array} \\ \text { The height of fir tree }\end{array} \quad \begin{array}{l}t=f+18 \\ 42=f+18 \\ f=24\end{array}\right]$ free is 18 feet taller than the fir tree.

## Answer Key For The California Mathematics Standards

## Grade 3

Algebra and Functions 1.0: Students select appropriate symbols, operations, and properties to represent, describe, simplify, and solve simple number relationship.

## AF 1.2: Students solve problems involving numeric equations or

 inequalities.If $6+N>9$, circle all the numbers that " $N$ " could be:


Algebra and Functions 1.0: Students select appropriate symbols, operations, and properties to represent, describe, simplify, and solve simple number relationship.
AF 1.3: Students select appropriate operational and relational symbols to make an expression true (e.g. if $4 \ldots 3=12$, what operational symbol goes in the blank?).

Put,,$+- x$, or $\div$ in the circle to make the equation true.
a.

c.

$6=15$
b.

$3=4$
d.

$8=32$

## Answer Key For The California Mathematics Standards

## Grade 3

Algebra and Functions 1.0: Students select appropriate symbols, operations, and properties to represent, describe, simplify, and solve simple number relationship.
AF 1.4: Students express simple unit conversions in symbolic form (e.g.,__ inches $=\ldots$ feet $\times 12$ ).
a. Change 8 feet into inches. Show your work.
$8 \times 12=96$ inches $\quad 8 \mathrm{ft} \cdot \frac{12 \text { inches }}{1 \mathrm{ft}}=96$ inches
b. Change 9 feet into yards. Show your work.

$$
\frac{9}{3}=3 \text { yards } \quad 9 \mathrm{ft} \cdot \frac{1 \mathrm{yd}}{3 \mathrm{ft}}=3 \text { yards }
$$

## Answer Key For The California Mathematics Standards

## Grade 3

Algebra and Functions 1.0: Students select appropriate symbols, operations, and properties to represent, describe, simplify, and solve simple number relationship.

## AF 1.5: Students recognize and use the commutative and

associative properties of multiplication (e.g., if $5 \times 7=35$, then what is $7 \times 5$ ? and if $5 \times 7 \times 3=105$, then what is $7 \times 3 \times 5$ ?).
a. Make 2 multiplication and 2 division statements using the numbers 5,4 , and 20 :
$5 \times 4=20$
$4 \times 5=20$
$20 \div 4=5$
$20 \div 5=4$

## Answer Key For The California Mathematics Standards

## Grade 3

Algebra and Functions 1.0: Students select appropriate symbols, operations, and properties to represent, describe, simplify, and solve simple number relationship.
AF 1.5: Students recognize and use the commutative and associative properties of multiplication (e.g., if $5 \times 7=35$, then what is $7 \times 5$ ? and if $5 \times 7 \times 3=105$, then what is $7 \times 3 \times 5$ ?).

## [CONTINUED]

b. $6 \times 12=72$

1. What is $6 \times(4 \times 3)$ ?

$$
6 \times 12=72
$$

2. What is $(6 \times 4) \times 3$ ?

$$
\begin{aligned}
& (6 \times 4) \times 3= \\
& 6 \times(4 \times 3)=72 \text { by the Associate Property and part } 1
\end{aligned}
$$

Algebra and Functions 2.0: Students represent simple functional relationships.
AF 2.1: Students solve simple problems involving a functional relationship between two quantities (e.g., find the total cost of multiple items given the cost per unit).

Pencils are $8 \$$ each. How much would 7 pencils cost? 56\$

$$
8 \phi \times 7=56 \Phi
$$

## Answer Key For The California Mathematics Standards

## Grade 3

Algebra and Functions 2.0: Students represent simple functional relationships.
AF 2.2: Students extend and recognize a linear pattern by its rules (e.g., the number of legs on a given number of horses may be calculated by counting by $4 s$ or by multiplying the number of horses by 4).

Mr. Brown's class was doing a science experiment. There were 7 groups in the class. Each group got 4 test tubes. How many test tubes did the class use? 28 test tubes


## Answer Key For The California Mathematics Standards

## Grade 3

Measurement and Geometry 1.0: Students choose and use appropriate units and measurement tools to quantify the properties of objects.
MG 1.1: Students choose the appropriate tools and units (metric and U.S.) and estimate and measure the length, liquid volume, and weight/mass of given objects.
a. What is the length of this piece of wood:

2 inches, $2 \frac{1}{2}$ inches, $2 \frac{1}{4}$ inches, or $2 \frac{1}{8}$ inches?
$2 \frac{1}{4}$ inches.
$\square$

|  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

b. About how tall is an adult man?

2 centimeters
2 meters
2 kilometers

## Answer Key For The California Mathematics Standards

## Grade 3

Measurement and Geometry 1.0: Students choose and use appropriate units and measurement tools to quantify the properties of objects.
MG 1.1: Students choose the appropriate tools and units (metric and U.S.) and estimate and measure the length, liquid volume, and weight/mass of given objects.

## [CONTINUED]

c. About how much milk is in the carton that you get at lunch?

1 gallon
1 pint
1 pint
1 quart
d. About how much does a newborn baby weigh?

7 ounces
7 pounds $\quad 7$ pounds
7 tons

## Answer Key For The California Mathematics Standards

## Grade 3

Measurement and Geometry 1.0: Students choose and use appropriate units and measurement tools to quantify the properties of objects.
MG 1.2: Students estimate or determine the area and volume of solid figures by covering them with squares or by counting the number of cubes that would fill them.

Below is a picture of a rectangle. What is the area of the figure?

$4 \mathrm{~cm} \times 5 \mathrm{~cm}=20 \mathrm{~cm}^{2}$

## Answer Key For The California Mathematics Standards

## Grade 3

Measurement and Geometry 1.0: Students choose and use appropriate units and measurement tools to quantify the properties of objects.
MG 1.3: Students find the perimeter of a polygon with integer sides.
a. What is the perimeter of a square that is 6 inches on one side?

24 inches

b. What is the perimeter this figure?

22 mm

$7 \mathrm{~mm}+4 \mathrm{~mm}+7 \mathrm{~mm}+4 \mathrm{~mm}=22 \mathrm{~mm}$

## Answer Key For The California Mathematics Standards

## Grade 3

Measurement and Geometry 1.0: Students choose and use appropriate units and measurement tools to quantify the properties of objects.
MG 1.4: Students carry out simple unit conversions within a system of measurement (e.g., centimeters and meters, hours and minutes).
a. 2 hours $=120$ minutes.

2 hours $\times 60$ minutes per $h r=120$ minutes
2 hours $\times \frac{60 \text { minutes }}{1 \text { hour }}=120$ minutes
b. 3 meters $=300$ centimeters.

3 meters $\times 100$ centimeters per meter $=300$ centimeters
3 meters $\times \frac{100 \text { centimeters }}{1 \text { meter }}=300$ centimeters
c. 8 yards $=24$ feet.

d. 36 inches $=3$ feet.
36 inches $\div 12$ inches per foot $=3$ feet $\quad 36$ inches $\times \frac{1 \text { foot }}{12 \text { inches }}=3$ feet

## Answer Key For The California Mathematics Standards

## Grade 3

Measurement and Geometry 2.0: Students describe and compare the attributes of plane and solid geometric figures and use their understanding to show relationships and solve problems.
MG 2.1: Students identify, describe, and classify polygons (including pentagons, hexagons, and octagons).
a. How many vertices does an octagon have?
b. How many sides does a pentagon have?

Measurement and Geometry 2.0: Students describe and compare the attributes of plane and solid geometric figures and use their understanding to show relationships and solve problems.
MG 2.2: Students identify attributes of triangles (e.g. two equal sides for the isosceles triangle, three equal sides for the equilateral triangle, right angle for the right triangle).

Label each triangle as isosceles, equilateral or right triangle:


1. right

2. isosceles

3. equilateral

## Answer Key For The California Mathematics Standards

## Grade 3

Measurement and Geometry 2.0: Students describe and compare the attributes of plane and solid geometric figures and use their understanding to show relationships and solve problems.
MG 2.3: Students identify attributes of quadrilaterals (e.g., parallel sides for the parallelogram, right angles for the rectangle, equal sides and right angles for the square).
a. Label the parallelogram and the square.


1. square
2. parallelogram
b. Tell one way that a parallelogram is different than a square:

The angles of a parallelogram are not required to be $90^{\circ}$. The sides of a parallelogram are not required to be the same length.
c. Circle the two line segments that are parallel in the trapezoid


## Answer Key For The California Mathematics Standards

## Grade 3

Measurement and Geometry 2.0: Students describe and compare the attributes of plane and solid geometric figures and use their understanding to show relationships and solve problems.
MG 2.4: Students identify right angles in geometric figures or in appropriate objects and determine whether other angles are greater or less than a right angle.

2. $C$

3. $B$

For each figure, write the letter $(A, B$, or $C)$ that matches the angle.
A. Right angle
B. Less than right angle
C. Greater than right angle scalene obtuse

Measurement and Geometry 2.0: Students describe and compare the attributes of plane and solid geometric figures and use their understanding to show relationships and solve problems.
MG 2.5: Students identify, describe, and classify common threedimensional geometric objects (e.g., cube, rectangular solid, sphere, prism, pyramid, cone, cylinder).

Write the label for each object: sphere, cone, pyramid or prism.

a. cone
b. sphere

d. prism

## Answer Key For The California Mathematics Standards

## Grade 3

Measurement and Geometry 2.0: Students describe and compare the attributes of plane and solid geometric figures and use their understanding to show relationships and solve problems.
MG 2.6: Students identify common solid objects that are the components needed to make a more complex solid object.

What shapes make this picture of an ice cream cone?

## SPHERE



## Answer Key For The California Mathematics Standards

## Grade 3

Statistics, Data Analysis, and Probability 1.0: Students conduct simple probability experiments by determining the number of possible outcomes and make simple predictions.
S 1.1: Students identify whether common events are certain, likely, unlikely, or improbable.

Circle the word that describes the likelihood of something happening:
a. The sun will rise tomorrow.
likely 'certain; unlikely impossible
b. You could have an elephant for a house pet.
likely
certain

impossible

## Answer Key For The California Mathematics Standards

## Grade 3

Statistics, Data Analysis, and Probability 1.0: Students conduct simple probability experiments by determining the number of possible outcomes and make simple predictions.
S 1.2: Students record the possible outcomes for a simple even (e.g., tossing a coin) and systematically keep track of the outcomes when the event is repeated many times.

I dropped a penny on the floor. Here is what happened:

| 1st time: | tails |  |
| :--- | :--- | :--- |
| 2nd time: | tails | 5 tails |
| 3rd time: | heads | 3 heads |
| 4th time: | tails |  |
| 5th time: | heads | 5 |
| 6th time: | tails | $\frac{-3}{2}$ |
| 7th time: | tails |  |
| 8th time: | heads |  |

How many more times did tails occur than heads?

## Answer Key For The California Mathematics Standards

## Grade 3

Statistics, Data Analysis, and Probability 1.0: Students conduct simple probability experiments by determining the number of possible outcomes and make simple predictions.
S 1.3: Students summarize and display the results of probability experiments in a clear and organized way (e.g., use a bar graph or a line plot).

## [SEE NEXT PAGE FOR SOLUTION]

Here are the results of an experiment in which a student flipped a coin:

| First flip | Heads |
| :--- | :--- |
| Next flip | Tails |
| Next flip | Tails |
| Next flip | Tails |
| Next flip | Tails |
| Next flip | Heads |
| Next flip | Tails |
| Next flip | Heads |
| Next flip | Tails |

## Answer Key For The California Mathematics Standards

## Grade 3

Statistics, Data Analysis, and Probability 1.0: Students conduct simple probability experiments by determining the number of possible outcomes and make simple predictions.
S 1.3: Students summarize and display the results of probability experiments in a clear and organized way (e.g., use a bar graph or a line plot).

## [CONTINUED]

Make a bar graph to show the results:

Heads: 3 Tails: 6


