NUMBER SENSE

The following ten California mathematics academic content standards from the Number Sense strand are assessed on the CAHSEE by 14 test questions and are represented in this booklet by 38 released test questions. These questions represent only a few of the ways in which these standards may be assessed on the CAHSEE.

GRADE 7 — NUMBER SENSE	
Standard Set 1.0	**Students know the properties of, and compute with, rational numbers expressed in a variety of forms:**
1.1	Read, write, and compare rational numbers in scientific notation (positive and negative powers of 10) with approximate numbers using scientific notation.
1.2	Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.
1.3	Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.
1.6	Calculate the percentage of increases and decreases of a quantity.
1.7	Solve problems that involve discounts, markups, commissions, and profit, and compute simple and compound interest.
Standard Set 2.0	**Students use exponents, powers, and roots, and use exponents in working with fractions:**
2.1	Understand negative whole-number exponents. Multiply and divide expressions involving exponents with a common base.
2.2	Add and subtract fractions by using factoring to find common denominators.
2.3	Multiply, divide, and simplify rational numbers by using exponent rules.
2.4	Use the inverse relationship between raising to a power and extracting the root of a perfect square integer; for an integer that is not square, determine without a calculator the two integers between which its square root lies and explain why.
2.5	Understand the meaning of the absolute value of a number; interpret the absolute value as the distance of the number from zero on a number line; and determine the absolute value of real numbers.

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1. The radius of the earth's orbit is 150,000,000,000 meters. What is this number in scientific notation?

   A 1.5×10^{-11}

   B 1.5×10^{11}

   C 15×10^{10}

   D 150×10^{9}

   M00213

2. $3.6 \times 10^{2} =$

   A   3.600

   B   36

   C   360

   D   3,600

   M00036

3. Which expression represents 0.0000007 in scientific notation?

   A 7×10^{-9}

   B 7×10^{-7}

   C 7×10^{7}

   D 7×10^{9}

   M20956

4. The five members of a band are getting new outfits. Shirts cost $12 each, pants cost $29 each, and boots cost $49 a pair. What is the total cost of the new outfits for all of the members?

   A $90

   B $95

   C $450

   D $500

   M00331

5. $\dfrac{11}{12} - \left(\dfrac{1}{3} + \dfrac{1}{4} \right) =$

   A $\dfrac{1}{3}$

   B $\dfrac{3}{4}$

   C $\dfrac{5}{6}$

   D $\dfrac{9}{5}$

   M02048

6. Which of the following numerical expressions results in a negative number?

   A $(-7) + (-3)$

   B $(-3) + (7)$

   C $(3) + (7)$

   D $(3) + (-7) + (11)$

   M00116

7. One hundred is multiplied by a number between 0 and 1. The answer has to be—

   A   less than 0.

   B   between 0 and 50 but not 25.

   C   between 0 and 100 but not 50.

   D   between 0 and 100.

   M00275

Number Sense

8. John uses $\frac{2}{3}$ of a cup of oats per serving to make oatmeal. How many cups of oats does he need to make 6 servings?

   A $2\frac{2}{3}$

   B 4

   C $5\frac{1}{3}$

   D 9

   M23015

9. What is the value of $\left(\frac{1}{8}\right)^2$?

   A $\frac{1}{64}$

   B $\frac{1}{32}$

   C $\frac{1}{16}$

   D $\frac{1}{4}$

   M10014

10. If Freya makes 4 of her 5 free throws in a basketball game, what is her free throw shooting percentage?

    A 20%

    B 40%

    C 80%

    D 90%

    M00223

11. Some students attend school 180 of the 365 days in a year. About what part of the year do they attend school?

    A 18%

    B 50%

    C 75%

    D 180%

    M00047

12. What number equals $\frac{3}{8}$?

    A 0.267

    B 0.375

    C 2.67

    D 3.75

    M13470

13. Last year $\frac{7}{16}$ of all students at a school participated in the science fair. About what percentage of the students participated?

    A 18%

    B 23%

    C 44%

    D 56%

    M32378

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14. The cost of an afternoon movie ticket last year was $4.00. This year an afternoon movie ticket costs $5.00. What is the percent increase of the ticket from last year to this year?

   A 10%

   B 20%

   C 25%

   D 40%

   M02158

17. On Monday, Lisa's fish bowl contained 1 gallon of water. On Friday, the fish bowl contained 0.75 gallon of water. By what percentage did the amount of water in Lisa's fish bowl decrease?

   A   0.25%

   B   0.75%

   C 25%

   D 75%

   M12141

15. The weekly sales of a magazine increased from 500,000 to 600,000. By what percentage did the magazine sales increase?

   A   17%

   B   20%

   C   83%

   D 120%

   M11242

18. Sally puts $200.00 in a bank account. Each year the account earns 8% simple interest. How much interest will be earned in three years?

   A $16.00

   B $24.00

   C $48.00

   D $160.00

   M02119

16. Traditions Clothing Store is having a sale. Shirts that were regularly priced at $20 are on sale for $17. What is the percentage of decrease in the price of the shirts?

   A   3%

   B 15%

   C 18%

   D 85%

   M30820

19. A pair of jeans regularly sells for $24.00. They are on sale for 25% off. What is the sale price of the jeans?

   A $6.00

   B $18.00

   C $20.00

   D $30.00

   M02870

20. A CD player regularly sells for $80. It is on sale for 20% off. What is the sale price of the CD player?

   A $16

   B $60

   C $64

   D $96

   M02425

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21. Jana bought a car for $4200 and later sold it for a 30% profit. How much did Jana sell the car for?

    A $1260

    B $2940

    C $5460

    D $7140

M10580

22. A salesperson at a clothing store earns a 2% commission on all sales. How much commission does the salesperson earn on a $300 sale?

    A $6

    B $15

    C $60

    D $150

M20470

23. Which number equals $(2)^{-4}$?

    A -8

    B $-\dfrac{1}{16}$

    C $\dfrac{1}{16}$

    D $\dfrac{1}{8}$

M10015

24. $\dfrac{10^{-2}}{10^{-4}} =$

    A 10^{-6}

    B 10^{-2}

    C 10^{2}

    D 10^{8}

M02832

25. Which of the following is equivalent to $7^{-6} \cdot 7^{4}$?

    A 7^{-24}

    B 7^{-10}

    C 7^{-2}

    D 7^{2}

M12679

26. Which fraction is equivalent to $\dfrac{5}{6} + \dfrac{7}{8}$?

    A $\dfrac{35}{48}$

    B $\dfrac{6}{7}$

    C $\dfrac{20}{21}$

    D $\dfrac{41}{24}$

M12713

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27. Which of the following is the prime factored form of the lowest common denominator of $\dfrac{7}{10} + \dfrac{8}{15}$?

A $\quad 5 \times 1$

B $\quad 2 \times 3 \times 5$

C $\quad 2 \times 5 \times 3 \times 5$

D $\quad 10 \times 15$

M02826

28. What is $\dfrac{3}{4} - \dfrac{1}{6}$?

A $\quad \dfrac{1}{6}$

B $\quad \dfrac{1}{3}$

C $\quad \dfrac{7}{12}$

D $\quad \dfrac{11}{12}$

M13552

29. $\left(3^8\right)^2 =$

A $\quad 3^4$

B $\quad 3^6$

C $\quad 3^{10}$

D $\quad 3^{16}$

M02406

30. $4^3 \cdot 4^2 =$

A $\quad 4^5$

B $\quad 4^6$

C $\quad 16^5$

D $\quad 16^6$

M02661

31. What is $6^2 \cdot 2^2$?

A $\quad 32$

B $\quad 48$

C $\quad 144$

D $\quad 256$

M22029

32. What is the value of $\dfrac{2^6 \cdot 2^4}{2^5}$?

A $\quad 4$

B $\quad 10$

C $\quad 16$

D $\quad 32$

M25206

33. The square root of 150 is between—

A $\quad 10$ and 11.

B $\quad 11$ and 12.

C $\quad 12$ and 13.

D $\quad 13$ and 14.

M02666

Number Sense

34. The square of a whole number is between 1500 and 1600. The number must be between—

A 30 and 35.

B 35 and 40.

C 40 and 45.

D 45 and 50.

M00313

35. Between which two integers is the value of $\sqrt{61}$?

A 6 and 7

B 7 and 8

C 8 and 9

D 9 and 10

M22059

36. If $|x| = 3$, what is the value of x?

A -3 or 0

B -3 or 3

C 0 or 3

D -9 or 9

M02122

37. What is the absolute value of -4?

A -4

B $-\dfrac{1}{4}$

C $\dfrac{1}{4}$

D 4

M02667

38. Which number has the greatest absolute value?

A -17

B -13

C 15

D 19

M12795

Number Sense

Question Number	Correct Answer	Standard	School Year of Exam
1	B	7NS1.1	2001–2002
2	C	7NS1.1	2000–2001
3	B	7NS1.1	2006–2007
4	C	7NS1.2	2001–2002
5	A	7NS1.2	2001–2002
6	A	7NS1.2	2000–2001
7	D	7NS1.2	2000–2001
8	B	7NS1.2	2003–2004
9	A	7NS1.2	2007–2008
10	C	7NS1.3	2001–2002
11	B	7NS1.3	2000–2001
12	B	7NS1.3	2005–2006
13	C	7NS1.3	2007–2008
14	C	7NS1.6	2001–2002
15	B	7NS1.6	2004–2005
16	B	7NS1.6	2006–2007
17	C	7NS1.6	2007–2008
18	C	7NS1.7	2001–2002
19	B	7NS1.7	2000–2001
20	C	7NS1.7	2000–2001
21	C	7NS1.7	2003–2004
22	A	7NS1.7	2004–2005
23	C	7NS2.1	2002–2003
24	C	7NS2.1	2001–2002
25	C	7NS2.1	2003–2004
26	D	7NS2.2	2002–2003
27	B	7NS2.2	2000–2001
28	C	7NS2.2	2003–2004
29	D	7NS2.3	2001–2002
30	A	7NS2.3	2000–2001
31	C	7NS2.3	2005–2006
32	D	7NS2.3	2006–2007
33	C	7NS2.4	2001–2002
34	B	7NS2.4	2000–2001
35	B	7NS2.4	2005–2006
36	B	7NS2.5	2001–2002
37	D	7NS2.5	2000–2001
38	D	7NS2.5	2005–2006