NAEP Released Items Aligned to the Iowa Core

5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

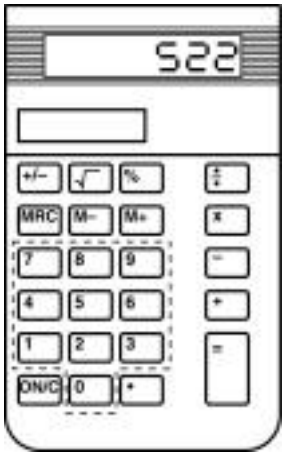
A certain reference file contains approximately one billion facts. About how many millions is that?

A. 1,000,000
B. 100,000
C. 10,000
D. 1,000
E. 100

1992-8-15-10

Source: National Assessment of Educational Progress, 1992, Grade 8 Mathematics Assessment.

5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.



Mrs. Jones bought 6 pints of berries. Each pint cost 87¢. Mrs. Jones used her calculator to find the cost of the berries and the display showed 522. What was the cost of the berries?

A. $522
B. $52.20
C. $5.22
D. $0.52

2003-4-7-9

Source: National Assessment of Educational Progress, 2003, Grade 4 Mathematics Assessment.

The mean distance from Venus to the Sun is 1.08×10^8 kilometers. Which of the following quantities is equal to this distance?

A. 10,800,000 kilometers
B. 108,000,000 kilometers
C. 1,080,000,000 kilometers
D. 10,800,000,000 kilometers
E. 108,000,000,000 kilometers

2005-8-3-16

Source: National Assessment of Educational Progress, 2005, Grade 8 Mathematics Assessment.

Which of the following represents fifteen tens?

A. 15
B. 150
C. 1,500
D. 1,510

2008-13-21-1

Source: National Assessment of Educational Progress, 2008, Age 13 Mathematics Assessment.

5.NBT.3 Read, write, and compare decimals to thousandths.

a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).
b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Ben bought 4 items at a bake sale and added their cost on his calculator. The total cost read 1.1 on the calculator. What amount does Ben need to pay?

F. 11 cents
G. 1 dollar and 1 cent
H. 1 dollar and 10 cents
I. 11 dollars

2007-4-7-15

Source: National Assessment of Educational Progress, 2007, Grade 4 Mathematics Assessment.

Which number is forty-five and six hundredths?

A. 45.6
B. 45.06
C. 456.0
D. 645.0

2007-4-11-13

Source: National Assessment of Educational Progress, 2007, Grade 4 Mathematics Assessment.

In which of the following numbers is the digit 6 in the hundredths place?

A. 682.3
B. 382.6
C. 6.832
D. 4.836
E. 2.862

2009-8-10-4

Source: National Assessment of Educational Progress, 2009, Grade 8 Mathematics Assessment.

What is 4 hundredths written in decimal notation?

A. 0.004
B. 0.04
C. 0.400
D. 4.00
E. 400.0

2005-8-12-1

Source: National Assessment of Educational Progress, 2005, Grade 8 Mathematics Assessment.

What number is four hundred five and three-tenths?

A. 45.3
B. 405.3
C. 453
D. 4,005.3

1992-4-7-5
1992-8-7-5

Source: National Assessment of Educational Progress, 1992, Grade 4 and Grade 8 Mathematics Assessments.

Which number is smallest?

A. 0.01
B. 0.001
C. 0.101
D. 0.1

2008-13-21-6

Source: National Assessment of Educational Progress, 2008, Age 13 Mathematics Assessment.

.07

What is the number in the box?

A. Seven hundredths
B. Seven tenths
C. Seven
D. Seventy

2008-13-21-14

Source: National Assessment of Educational Progress, 2008, Age 13 Mathematics Assessment.

Which number is GREATEST?

A. 0.35
B. 0.035
C. 0.305
D. 0.03500

2004-13-23-23

Source: National Assessment of Educational Progress, 2004, Age 13 Mathematics Assessment.

Which number is between 0.09 and 0.1?

A. 0.95
B. 0.5
C. 0.095
D. 0.05

2008-17-21-2

Source: National Assessment of Educational Progress, 2008, Age 17 Mathematics Assessment.

Which number is between 1.8 and 1.9?

A. 0.189
B. 0.198
C. 1.83
D. 1.93

2008-17-21-7

Source: National Assessment of Educational Progress, 2008, Age 17 Mathematics Assessment.

Which number is between 1.2 and 1.3?

A. .123
B. .132
C. 1.23
D. 1.32

2004-17-23-8

Source: National Assessment of Educational Progress, 2004, Age 17 Mathematics Assessment.

Change the following decimals to fractions.

0.029 = _____

2004-17-23-31

Source: National Assessment of Educational Progress, 2004, Age 17 Mathematics Assessment.

5.NBT.4 Use place value understanding to round decimals to any place.

Amber and Charlotte each ran a mile. It took Amber 11.79 minutes. It took Charlotte 9.08 minutes. Which number sentence can Charlotte use to best estimate the difference in their times?

A. 11 - 9 = ☐
B. 11 - 10 = ☐
C. 12 - 9 = ☐
D. 12 - 10 = ☐

2005-4-12-45

Source: National Assessment of Educational Progress, 2005, Grade 4 Mathematics Assessment.

Which of the following numbers is twenty-three and eight-thousandths?

A. 230.8
B. 23.8
C. 23.08
D. 23.008
E. 23.0008

2011-8-8-1

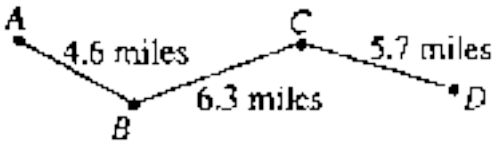
Source: National Assessment of Educational Progress, 2011, Grade 8 Mathematics Assessment.

Alba needed to know about how much the sum of 19.6, 23.8, and 38.4 is. She correctly rounded each of these numbers to the nearest whole number. What three numbers did she use?

A. 19, 23, 38
B. 19, 24, 38
C. 20, 24, 38
D. 20, 24, 39

2005-4-4-9
2005-8-4-9

Source: National Assessment of Educational Progress, 2005, Grade 4 and Grade 8 Mathematics Assessments.



Carol wanted to estimate the distance from *A* to *D* along the path shown on the map above. She correctly rounded each of the given distances to the nearest mile and then added them. Which of the following sums could be hers?

A. 4 + 6 + 5 = 15
B. 5 + 6 + 5 = 16
C. 5 + 6 + 6 = 17
D. 5 + 7 + 6 = 18

1992-4-5-2
1992-8-5-2
1992-12-5-2

Source: National Assessment of Educational Progress, 1992, Grade 4, Grade 8 and Grade 12 Mathematics Assessments.

Which of the following is closest to 15 seconds?

A. 14.1 seconds
B. 14.7 seconds
C. 14.9 seconds
D. 15.2 seconds

1992-4-15-1
1992-8-15-1

Source: National Assessment of Educational Progress, 1992, Grade 4 and Grade 8 Mathematics Assessments.

5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.

$(47 \times 75) \div 25 =$

A. 141
B. 1,175
C. 3,525
D. 4,700

2011-4-8-1

Source: National Assessment of Educational Progress, 2011, Grade 4 Mathematics Assessment.

A store sells 168 tapes each week. How many tapes does it sell in 24 weeks?

A. 7
B. 192
C. 4,032
D. 4,172

1992-4-12-3

Source: National Assessment of Educational Progress, 1992, Grade 4 Mathematics Assessment.

The booster club is planning to buy peanuts to serve at its meetings. The cost of the peanuts depends on the amount purchased, as shown in the table below.

Total Number of Pounds Purchased	Cost of Peanuts Per Pound
0 - 5	$2.50
6 - 10	$2.25
11 - 20	$2.00
Over 20	$1.75

How much will 18 pounds of peanuts cost?

A. $31.50
B. $34.00
C. $36.00
D. $40.50
E. $45.00

2007-8-11-10

Source: National Assessment of Educational Progress, 2007, Grade 8 Mathematics Assessment.

5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Mr. Jones picked a number greater than 100.
He told Gloria to divide the number by 18.

He told Edward to divide the number by 15.

Whose answer is greater?

○ Gloria's ○ Edward's

Explain how you know this person's answer will always be greater for any number that Mr. Jones picks.

2011-4-9-12

Source: National Assessment of Educational Progress, 2011, Grade 4 Mathematics Assessment.

There will be 58 people at a breakfast and each person will eat 2 eggs. There are 12 eggs in each carton. How many cartons of eggs will be needed for the breakfast?

A. 9
B. 10
C. 72
D. 116

2007-4-7-14

Source: National Assessment of Educational Progress, 2007, Grade 4 Mathematics Assessment.

Kirstin wants to buy a flute that costs $240. She has saved $20 each week for 3 weeks. How many <u>more</u> weeks does Kirstin need to save money if she continues to save $20 each week?

A. 9 weeks
B. 10 weeks
C. 11 weeks
D. 12 weeks

2003-4-7-14

Source: National Assessment of Educational Progress, 2003, Grade 4 Mathematics Assessment.

Divide:

$$21\overline{)504}$$

2003-8-10-1

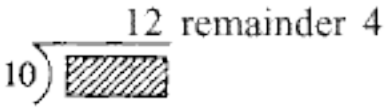
Source: National Assessment of Educational Progress, 2003, Grade 8 Mathematics Assessment.

A club held a car wash and washed 21 cars. If the club raised $84, how much did it charge per car?

A. $0.25
B. $4.00
C. $5.00
D. $1,764.00

1992-4-15-6
1992-8-15-6

Source: National Assessment of Educational Progress, 1992, Grade 4 and Grade 8 Mathematics Assessments.



In the division problem above, what number does represent?

A. 116
B. 120
C. 124
D. 160
E. 480

1990-12-9-2

Source: National Assessment of Educational Progress, 1990, Grade 12 Mathematics Assessment.

5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Multiply: $\begin{array}{r} 8.5 \\ \times 4.9 \\ \hline \end{array}$

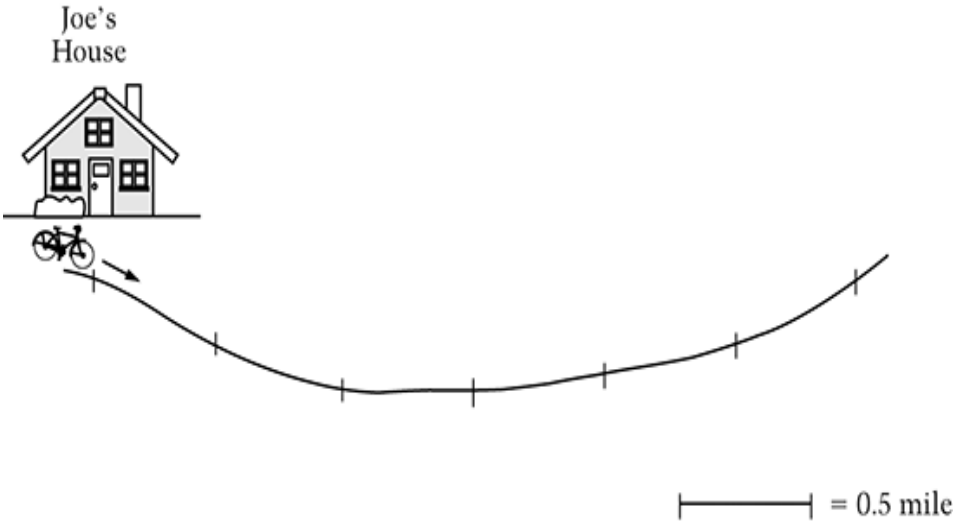
2011-4-8-5

Source: National Assessment of Educational Progress, 2011, Grade 4 Mathematics Assessment.

Joe rode his bicycle from his house to his friend's house.
He rode 1.7 miles along the path below.

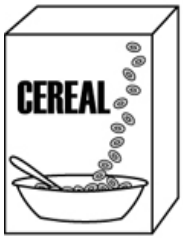
The path is marked every 0.5 mile.

Put an X on the path to show how far Joe rode to his friend's house.



2011-4-12-12

Source: National Assessment of Educational Progress, 2011, Grade 4 Mathematics Assessment.



$4.95

$2.45

SALES TAX TABLE

Amount of Sales	Amount of Tax
$6.00	$0.36
6.20	0.37
6.40	0.38
6.60	0.40
6.80	0.41
7.00	0.42
7.20	0.43
7.40	0.44
7.60	0.46
7.80	0.47
8.00	0.48

Carlos bought the cereal and milk shown. Use the table to find out the total amount Carlos spent, including tax.

Total amount spent: _____

Show how you found your answer.

2007-4-7-11

Source: National Assessment of Educational Progress, 2007, Grade 4 Mathematics Assessment.

The Breakfast Barn bought 135 dozen eggs at $0.89 per dozen. What was the total cost of the eggs?

A. $116.75
B. $120.15
C. $135.89
D. $151.69

2003-4-7-12
2003-8-7-2

Source: National Assessment of Educational Progress, 2003, Grade 4 and Grade 8 Mathematics Assessments.

Every hour, a company makes 8,400 paper plates and puts them in packages of 15 plates each. How many packages are made in one hour?

A. 560
B. 8,385
C. 17,857
D. 126,000

1996-4-12-6

Source: National Assessment of Educational Progress, 1996, Grade 4 Mathematics Assessment.

A pack of stickers cost $2.49 and a book costs $1.85. How much MORE do the stickers cost than the book?

A. $0.64
B. $0.74
C. $1.85
D. $4.34
E. $5.34

2008-9-21-22

Source: National Assessment of Educational Progress, 2008, Age 9 Mathematics Assessment.

Find the product.

$$\begin{array}{r} 314 \\ \times \quad 12 \\ \hline \end{array}$$

2004-9-23-17

Source: National Assessment of Educational Progress, 2004, Age 9 Mathematics Assessment.

Day	Rainfall (in centimeters)
Sunday	0
Monday	0
Tuesday	6.3
Wednesday	0
Thursday	1.5
Friday	0.4
Saturday	0.5

The table shows how much rain fell on each day of a week in May. How much rain fell during that week?

A. 7.8 cm
B. 8.7 cm
C. 12.3 cm
D. 16.8 cm

2003-4-7-3

Source: National Assessment of Educational Progress, 2003, Grade 4 Mathematics Assessment.

$17 \times \square = 204$

In the number sentence above, what number belongs in the $\square$?

1990-4-9-4

Source: National Assessment of Educational Progress, 1990, Grade 4 Mathematics Assessment.

Length can be measured to within 0.05 centimeter accuracy by using a certain type of measuring instrument. A reading of 3.7 centimeters on this instrument means that the actual length is at least

A. 3.20 centimeters
B. 3.65 centimeters
C. 3.69 centimeters
D. 3.70 centimeters
E. 3.75 centimeters

2003-8-6-22

Source: National Assessment of Educational Progress, 2003, Grade 8 Mathematics Assessment.

Last week Maureen earned $288.00 (before taxes) for working 40 hours. This week Maureen worked 29 hours at the same rate of pay. How much did Maureen earn (before taxes) this week?

A. $72.00
B. $72.50
C. $203.00
D. $208.80
E. $397.24

2011-8-9-4

Source: National Assessment of Educational Progress, 2011, Grade 8 Mathematics Assessment.

Item	Cost
Yogurt	$0.95 each
Pretzels	$2.50 per bag
Cheese cubes	$2.19 per bag
Bagel	$0.89 each
Fruit drink	$1.85 each
Peanuts	$2.55 per bag

Robert has $30 and wants to buy as many bags of peanuts as possible. He does not have to pay any sales tax on the food that he buys.

Based on the prices given in the chart above, how many bags of peanuts can Robert buy?

Robert buys all the bags of peanuts that he can. What is the most expensive single item on the chart that he can buy with the money he has left?

2011-8-9-8

Source: National Assessment of Educational Progress, 2011, Grade 8 Mathematics Assessment.

It costs $0.25 to operate a clothes dryer for 10 minutes at a laundromat. What is the total cost to operate one clothes dryer for 30 minutes, a second for 40 minutes, and a third for 50 minutes?

A. $3.25
B. $3.00
C. $2.75
D. $2.00
E. $1.20

2007-8-7-3

Source: National Assessment of Educational Progress, 2007, Grade 8 Mathematics Assessment.

Peter bought 45 sheets of plywood at a total cost of $400. He plans to sell each sheet of plywood for $15. If Peter has no other expenses, what is the fewest number of sheets he must sell to make a profit?

A. 3
B. 15
C. 16
D. 26
E. 27

2007-8-7-8

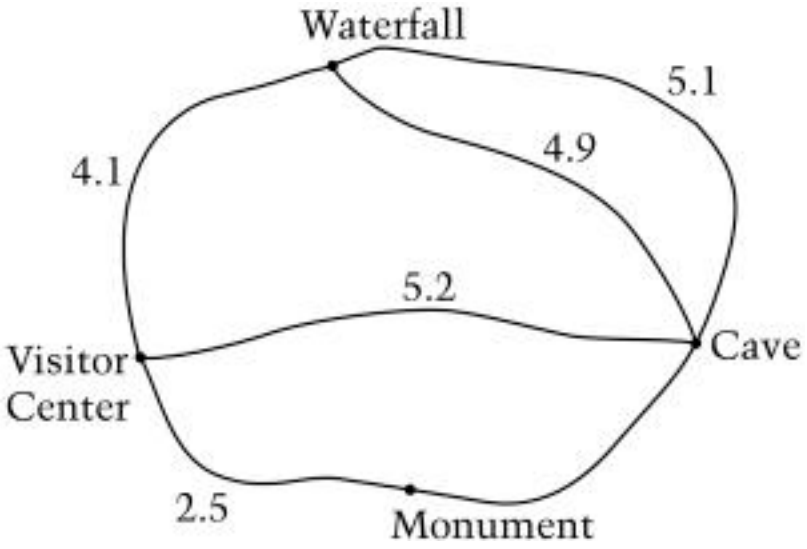
Source: National Assessment of Educational Progress, 2007, Grade 8 Mathematics Assessment.

What is the greatest number of 30-cent apples that can be purchased with $5.00 ?

A. 6
B. 15
C. 16
D. 17
E. 20

2007-8-9-1

Source: National Assessment of Educational Progress, 2007, Grade 8 Mathematics Assessment.



The map above gives the distances, in miles, between various locations in a state park. Traveling the shortest possible total distance along the paths shown on the map, from the visitor center Teresa visits the cave, waterfall, and monument, but not necessarily in that order, and then returns to the visitor center. If she does not retrace her steps along any path and the total distance that Teresa travels is 14.7 miles, what is the distance between the cave and the monument?

A. 2.2 miles
B. 2.5 miles
C. 2.7 miles
D. 3.0 miles
E. 3.2 miles

2005-8-3-15

Source: National Assessment of Educational Progress, 2005, Grade 8 Mathematics Assessment.

How much change will John get back from $5.00 if he buys 2 notebooks that cost $1.80 each?

A. $1.40
B. $2.40
C. $3.20
D. $3.60

2003-4-6-15
2003-8-6-7

Source: National Assessment of Educational Progress, 2003, Grade 4 and Grade 8 Mathematics Assessments.

Movie tickets cost $5.25 each. If 100 tickets were sold, how much money was collected?

2003-8-10-2

Source: National Assessment of Educational Progress, 2003, Grade 8 Mathematics Assessment.

What is the product of 3.12 and 8?

1990-8-9-4

Source: National Assessment of Educational Progress, 1990, Grade 8 Mathematics Assessment.

Sally bought two tickets to a movie. Each ticket cost $4.25. She paid for the tickets with a $10 bill. How much change did she get?

A. $5.75
B. $5.25
C. $4.25
D. $1.75
E. $1.50

2008-13-21-21

Source: National Assessment of Educational Progress, 2008, Age 13 Mathematics Assessment.

$360 \times 0.3 =$

A. 10.8
B. 108
C. 120
D. 980
E. 1,080

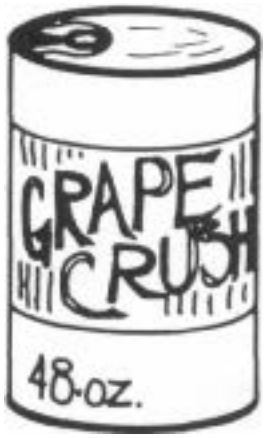
2009-12-2-1

Source: National Assessment of Educational Progress, 2009, Grade 12 Mathematics Assessment.

Rulers cost $0.85 each, including tax. How many rulers can Tom buy if he has $7.00?

1992-12-15-1

Source: National Assessment of Educational Progress, 1992, Grade 12 Mathematics Assessment.



Grape Crush costs 75¢ for one 48 ounce can. At the school carnival Joan sells cups holding 6 ounces for 15¢. How much money does the school make on each can?

2004-17-23-33

Source: National Assessment of Educational Progress, 2004, Age 17 Mathematics Assessment.