NAEP Released Items Aligned to the Iowa Core

6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."

What is the ratio of the length of a side of an equilateral triangle to its perimeter?

A. 1:1
B. 1:2
C. 1:3
D. 2:1
E. 3:1

1990-8-9-14

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

In a group of 1,200 adults, there are 300 vegetarians. What is the ratio of nonvegetarians to vegetarians in the group?

A. 1 to 3
B. 1 to 4
C. 3 to 1
D. 4 to 1
E. 4 to 3

1992-12-15-5

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

6.RP.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."

6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
b. Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

The school carnival committee sold a total of 200 tickets for the grand prize drawing. Sue bought enough tickets so that she had a 20 percent chance of winning the grand prize. How many tickets did Sue buy?

A. 20
B. 40
C. 160
D. 400
E. 1,000

2009-8-10-5

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

Tammy scored 52 out of 57 possible points on a quiz. Which of the following is closest to the percent of the total number of points that Tammy scored?

A. 0.91%
B. 1.10%
C. 52%
D. 91%
E. 95%

2007-8-9-7

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

There were 90 employees in a company last year. This year the number of employees increased by 10 percent. How many employees are in the company this year?

A. 9
B. 81
C. 91
D. 99
E. 100

2005-8-3-17

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

Ms. Thierry and 3 friends ate dinner at a restaurant. The bill was $67. In addition, they left a $13 tip. Approximately what percent of the total bill did they leave as a tip?

A. 10%
B. 13%
C. 15%
D. 20%
E. 25%

2005-8-12-11

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

One store, Price Pleasers, reduces the price <u>each week</u> of a $100 stereo by 10 percent of <u>the original</u> price.

Another store, Bargains Plus, reduces the price <u>each week</u> of the same $100 stereo by 10 percent of <u>the previous week's</u> price.

After 2 weeks, how will the prices at the two stores compare?

Ⓐ The price will be cheaper at Price Pleasers.

Ⓑ The price will be the same at both stores.

Ⓒ The price will be cheaper at Bargains Plus.

Explain your reasoning.

2003-8-7-6

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

Which of the following ratios is equivalent to the ratio of 6 to 4?

A. 12 to 18
B. 12 to 8
C. 8 to 6
D. 4 to 6
E. 2 to 3

2003-8-10-10

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

Of the following, which is the closest approximation of a 15 percent tip on a restaurant check of $24.99?

A. $2.50
B. $3.00
C. $3.75
D. $4.50
E. $5.00

1996-8-3-3

Source: National Assessment of Educational Progress, 1996, Grade 8 Mathematics Assessment.

The weight of an object on the Moon is 1/6 the weight of that object on the Earth. An object that weighs 30 pounds on Earth would weigh how many pounds on the Moon?

1990-8-9-9

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

Which of the following is true about 56% of 20?

A. It is less than 20.
B. It is greater than 20.
C. It is equal to 20.
D. It is more than double 20.

2008-13-21-16

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

Change .35 to a percent.

A. 0.35%
B. 3.5%
C. 35%
D. 350%

2004-13-23-15

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

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7 is what percent of 175 ?

A. 4%
B. 12.25%
C. 25%
D. 40%

2004-13-23-35

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

Which of the following means .7%?

A. .7
B. 7%
C. .007
D. 70

2004-13-23-37

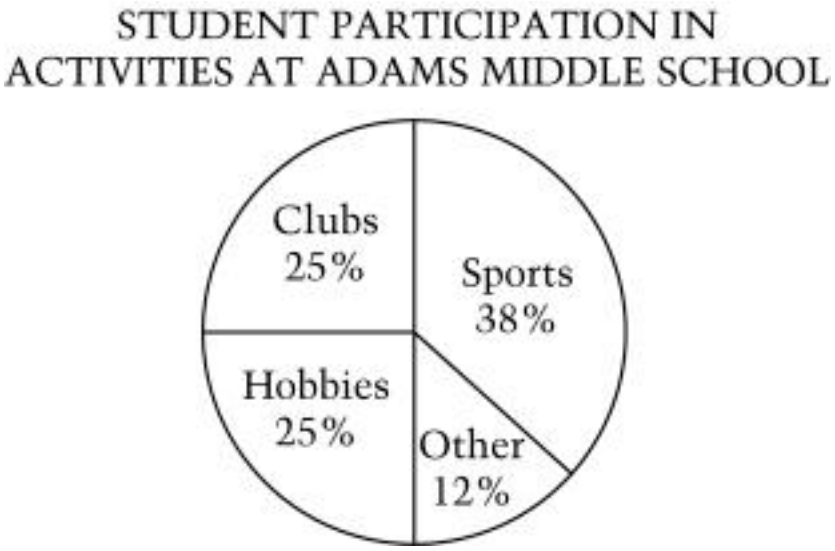
Source: National Assessment of Educational Progress, 2004, Age 13 Mathematics Assessment.

On average, thunder is heard in Tororo, Uganda, 251 days each year. What is the probability that thunder will be heard in Tororo on any day? (1 year = 365 days)

Give your answer to the nearest percent.

2011-8-8-6

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



There are 1,200 students enrolled in Adams Middle School. According to the graph above, how many of these students participate in sports?

A. 380
B. 456
C. 760
D. 820
E. 1,162

2003-8-7-14

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

From a shipment of 500 batteries, a sample of 25 was selected at random and tested. If 2 batteries in the sample were found to be dead, how many dead batteries would be expected in the entire shipment?

A. 10
B. 20
C. 30
D. 40
E. 50

1992-8-5-18
1992-12-5-18

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

In the sequence below, the ratio of each term to the term immediately following it is constant.

What is the next term of this sequence after 2240 ?

35, 280, 2240, _____

2009-8-10-9

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

Easy Ride Van Company finds that about 40 percent of the time a person who makes an advance reservation for transportation does not keep the reservation. Therefore, for each of their 10-passenger vans, the Easy Ride Van Company schedules 13 persons on the basis of advance reservations.

Based on the information above, about how many riders out of the 13 scheduled would <u>not</u> keep their reservations?

A. 1
B. 3
C. 5
D. 7
E. 9

2005-12-4-4

Source: National Assessment of Educational Progress, 2005, Grade 12 Mathematics Assessment.

If $\frac{2}{25} = \frac{n}{500}$, then n =

A. 10
B. 20
C. 30
D. 40
E. 50

1990-8-7-2
1990-12-7-2

Source: National Assessment of Educational Progress, 1990, Grade 8 and Grade 12 Mathematics Assessments.

What percent of 175 is 7?

A. 4%
B. 12.25%
C. 25%
D. 40%

1990-12-9-10

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

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30 is what percent of 60?

A. 0.5%
B. 2%
C. 30%
D. 50%

2008-17-21-5

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

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15 is 25% of what number?

A. 0.60
B. 3.75
C. 37.5
D. 60

2008-17-21-8

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

Which of the following is true about 56% of 20?

A. It is less than 20.
B. It is greater than 20.
C. It is equal to 20.
D. It is more than double 20.

2008-17-21-16

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

Which of the following decimals represents 15%?

A. 15.
B. .15
C. 1.5
D. 1500

2004-17-23-4

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