1 / 11

6. $\dfrac{(.2)^3}{(.02)^2} =$

A) .2 B) 2 C) 10 D) 15 E) 20

1988 Q6

6. E $\dfrac{(.2)^3}{(.02)^2} = \dfrac{.008}{.0004} = \dfrac{80}{4} = 20$

OR

$\dfrac{.2}{.02} \times \dfrac{.2}{.02} \times .2 = 10 \times 10 \times .2 = 20.$

2 / 11

6. $\dfrac{2}{1 - \frac{2}{3}} =$

A) -3 B) $-\frac{4}{3}$ C) $\frac{2}{3}$ D) 2 E) 6

1986 Q6

6. (E) $\dfrac{2}{1 - \frac{2}{3}} = \dfrac{2}{\frac{1}{3}} = 2 \times 3 = 6.$

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2008 Q7

7. If $\frac{3}{5} = \frac{M}{45} = \frac{60}{N}$, what is $M + N$?

(A) 27 **(B)** 29 **(C)** 45 **(D)** 105 **(E)** 127

7. **Answer (E):** Note that $\frac{M}{45} = \frac{3}{5} = \frac{3 \cdot 9}{5 \cdot 9} = \frac{27}{45}$, so $M = 27$. Similarly, $\frac{60}{N} = \frac{3}{5} = \frac{3 \cdot 20}{5 \cdot 20} = \frac{60}{100}$, so $N = 100$. The sum $M + N = 27 + 100 = 127$.

OR

Note that $\frac{M}{45} = \frac{3}{5}$, so $M = \frac{3}{5} \cdot 45 = 27$. Also $\frac{60}{N} = \frac{3}{5}$, so $\frac{N}{60} = \frac{5}{3}$, and $N = \frac{5}{3} \cdot 60 = 100$. The sum $M + N = 27 + 100 = 127$.

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1991 Q7

7. The value of $\frac{(487,000)(12,027,300) + (9,621,001)(487,000)}{(19,367)(.05)}$ is closest to

(A) 10,000,000 **(B)** 100,000,000 **(C)** 1,000,000,000
(D) 10,000,000,000 **(E)** 100,000,000,000

7. **(D)** Rounding each number to one significant digit (highest place value) yields

$$\frac{(500,000)(10,000,000)+(10,000,000)(500,000)}{(20,000)(.05)}$$

which equals $\dfrac{(500,000)(10,000,000+10,000,000)}{1,000}$

which equals $(500)(20,000,000)=10,000,000,000.$

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1995 Q7

7. At Clover View Junior High, one half of the students go home on the school bus. One fourth go home by automobile. One tenth go home on their bicycles. The rest walk home. What fractional part of the students walk home?

(A) $\frac{1}{16}$ **(B)** $\frac{3}{20}$ **(C)** $\frac{1}{3}$ **(D)** $\frac{17}{20}$ **(E)** $\frac{9}{10}$

7. **(B)** $\frac{1}{2}+\frac{1}{4}+\frac{1}{10}=\frac{10}{20}+\frac{5}{20}+\frac{2}{20}=\frac{17}{20}$. The rest, $\frac{20}{20}-\frac{17}{20}=\frac{3}{20}$, walk home.

OR

Since $\frac{1}{2}$ or 50% of the students use the bus,

$\frac{1}{4}$ or 25% of the students use an auto, and

$\frac{1}{10}$ or 10% of the students use a bicycle,

it follows that $100\%-(50\%+25\%+10\%)=15\%$ or $\frac{3}{20}$ of the students walk home.

OR

Assume there are 100 students. This yields

$\frac{1}{2}$		$\frac{1}{4}$		$\frac{1}{10}$			
50	+	25	+	10	+	?	= 100 total.
bus		automobile		bicycle		walk	

Thus 15 walk home, which gives $\frac{15}{100}=\frac{3}{20}$.

1999 Q7

7. The third exit on a highway is located at milepost 40 and the tenth exit is at milepost 160. There is a service center on the highway located three-fourths of the way from the third exit to the tenth exit. At what milepost would you expect to find this service center?

(A) 90 **(B)** 100 **(C)** 110 **(D)** 120 **(E)** 130

7. **Answer (E):** There are $160 - 40 = 120$ miles between the third and tenth exits, so the service center is at milepost $40 + (3/4)120 = 40 + 90 = 130$.

7 / 11

1991 Q8

8. What is the largest quotient that can be formed using two numbers chosen from the set $\{-24, -3, -2, 1, 2, 8\}$?

(A) -24 (B) -3 (C) 8 (D) 12 (E) 24

8. (D) The largest quotient would be a positive number. To obtain a positive quotient either both numbers must be positive or both must be negative. Using two positive numbers, the largest quotient is $\frac{8}{1} = 8$. Using two negative numbers, the largest quotient is $\frac{-24}{-2} = 12$.

8 / 11

8. $(2 \times 3 \times 4)(\frac{1}{2} + \frac{1}{3} + \frac{1}{4}) =$

A) 1 B) 3 C) 9 D) 24 E) 26

1989 Q8

8. E Using the distributive law, the product equals

$(2x3x4)x(\frac{1}{2}) + (2x3x4)x(\frac{1}{3}) + (2x3x4)x(\frac{1}{4}) =$

$\{3x4\} + \{2x4\} + \{2x3\} = 12 + 8 + 6 = 26.$

Although it is more tedious, one can perform the operations within each set of parentheses to obtain:

$24\,(\frac{6}{12} + \frac{4}{12} + \frac{3}{12}) = 24\,(\frac{13}{12}) = 26.$

9. When finding the sum $\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \frac{1}{6} + \frac{1}{7}$, the least common denominator used is

A) 120 B) 210 C) 420 D) 840 E) 5040

1987 Q9

9. C The least common denominator(LCD) is the least common multiple of the denominators 2,3,4,5,6,7 or $2 \cdot 2 \cdot 3 \cdot 5 \cdot 7 = 420$.

2017 Q9

9. All of Marcy's marbles are blue, red, green, or yellow. One third of her marbles are blue, one fourth of them are red, and six of them are green. What is the smallest number of yellow marbles that Marcy could have?

(A) 1 **(B)** 2 **(C)** 3 **(D)** 4 **(E)** 5

9. **Answer (D):** The total number of Marcy's marbles must be divisible by both 3 and 4 thus it must be a multiple of 12. If she has just 12 marbles, then 4 are blue and 3 are red, leaving just 5 other marbles, so she could not have 6 green marbles. If she has 24 marbles, then 8 are blue and 6 are red, leaving 10 other marbles, so she could have 6 green marbles and 4 yellow marbles. The smallest number of yellow marbles that Marcy would have is 4.

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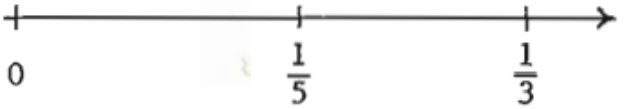
1985 Q10

10. The fraction halfway between $\frac{1}{5}$ and $\frac{1}{3}$ (on the number line) is

A) $\frac{1}{4}$ B) $\frac{2}{15}$ C) $\frac{4}{15}$

D) $\frac{53}{200}$ E) $\frac{8}{15}$



10. (C) $\dfrac{\frac{1}{3}+\frac{1}{5}}{2} = \dfrac{\frac{8}{15}}{2} = \dfrac{4}{15}$