

Fractions

1) During a basketball game, four players scored all the points for their team. Joe scored half the points, Frank scored one-third of the points, Ken made one three-point shot and Mike scored his only point with a free throw. How many points did their team score? (1) 2004-WO1-2

2) In linear measure, 7 palms equal 1 cubit, and 28 digits equal 1 cubit. What is the number of cubits in 8 palms, 6 digits? (2) 1999-WU2-2

3) A digital, 12-hour clock shows hours and minutes. During what fraction of the day will the clock show the digit 1 in its display? (1) 1999-WU6-10

4) From a bag of coins, $\frac{1}{3}$ were given to Mary, $\frac{1}{5}$ to Norm, $\frac{1}{6}$ to Anna, and $\frac{1}{4}$ to Bjorn. The six left were given to Tony. How many coins were originally in the bag? (1) 1999-WU7-7

5) Simplify: $\frac{\frac{5}{3!} + \frac{5}{4!}}{\frac{5^2}{5!}}$ (3) 1999-WU8-7

6) For what value of n is the following equation true? $\frac{3}{4 + \frac{n}{3 + \frac{1}{7}}} = 1$ (1) 1999-WU12-10

7) Evaluate: $\frac{\frac{1}{2} - \frac{1}{3}}{\frac{1}{8}}$ (1) 2000-WU1-9

8) In a mayor's race of three candidates, Isaac received 4000 votes, Barbara received 6000 votes and Rene received $\frac{1}{3}$ of the votes. What was the total number of votes in the election? (1) 2000-WU3-7

9) A yearbook sells advertisement that can cover one-half, one-fourth or one-eighth of a page. If a page measures 8.5 inches by 10 inches, what is the area for the smallest ad? (1) 2000-WU4-3

10) A yearbook sells half-page ads for \$100, quarter-page ads for \$75, and eighth-page ads for \$50. Two pages yield the same income, although the number of ads of each size are different for these pages. What is the income for one of these pages? (2) 2000-WU5-6

11) In a group of 3000 students, one-third of the students have been absent, one-tenth of the students have been tardy, and one-fourth of the students are freshman. What is the least possible number of students who have never been absent, never been tardy, and are not freshman? (2) 2000-WU13-1

12) If $12a + 10b = 1020$, what is the value of $\frac{a}{5} + \frac{b}{6}$? (3) 2000-WU13-9

13) A survey of 530 people found that 9 out of 10 chose their best friend as their preferred traveling companion on family trips. How many of those surveyed chose someone other than their best friend as their preferred companion? (1) 2000-WO1-8

14) Express the value of the following expression as a common fraction. (1) 2000-WO4-2

$$1 + \frac{2}{3 + \frac{4}{5}}$$

15) Simplify: $\frac{\frac{1}{2} \times 1024}{0.125 \times 2^{12}}$ (1) 2000-WU9-9

16) If $a/b = 12$ and $b/c = 20$, what is the value of $\frac{a}{b+c}$? Express your answer as a decimal to the nearest tenth. (3) 2000-WU7-9

17) What is the sum of the reciprocals of the first three positive even integers? (1) 2003-WU2-3

18) Michael baked a chocolate cake. He left $\frac{1}{2}$ of the cake for his family and took the rest to a friend's house. Of the amount he left for his family, his brother ate $\frac{1}{4}$ of it, and his sister ate $\frac{1}{3}$ of it. Later that night, his dad ate $\frac{2}{5}$ of what was then remaining. When Michael got home the next morning, how much of the original cake was left? (1) 2003-WU7-4

19) What is the sum of the positive integers k such that $\frac{k}{27}$ is greater than $\frac{2}{3}$ and less than $\frac{8}{9}$? (1) 2003-WO4-2

20) Each row of passenger seats on an airplane is set up as shown, where "(" indicate windows, "#" represents a seat, and an aisle is between the second and third seat in every row. There are 96 passenger seats that are not along the aisle. How many passenger seats are along the aisle? (2) 2003-WU11-9

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21) How many integers have a reciprocal that is greater than $\frac{1}{50.1}$ and less than $\frac{1}{\pi}$? (3) 2003-WU12-2

22) Consider the geometric sequence $\frac{16}{9}, \frac{8}{3}, 4, 6, 9, \dots$. What is the eighth term of the sequence? (1) 2003-WU18-8

23) Cameron and a friend order one pizza that is half-pepperoni and half-sausage. Cameron eats $\frac{1}{3}$ of the pepperoni and $\frac{1}{4}$ of the sausage. What fraction of the pizza did Cameron eat? (1) 2002-WU4-9

24) Calculate the product $\left(\frac{3}{6}\right)\left(\frac{6}{9}\right)\left(\frac{9}{12}\right)\dots\left(\frac{2001}{2004}\right)$. (3) 2002-WU10-2

25) Suppose $\frac{x}{y} = \frac{3}{4}$, $\frac{y}{z} = \frac{2}{3}$ and $\frac{z}{w} = \frac{5}{8}$. What is the value of $\frac{x}{w} + \frac{y}{w} + \frac{z}{w}$? (2) 2002-WU16-3

26) Albert was often uncertain. On Wednesday, he left home and walked to his sister's house, then walked $\frac{1}{2}$ way back home, turned and went $\frac{1}{2}$ the distance back to his sister's house, turned again, and walked $\frac{1}{2}$ of the distance back home. He then walked to the house that was farthest from his current position. If his sister lives 16 blocks from his house, what was the total number of blocks Albert walked on Wednesday? (1) 1997-WU3-5

27) What common fraction has a reciprocal of 2.8? (1) 1997-WU5-3

28) A town has 8000 residents. Of them, $\frac{1}{6}$ of the females married $\frac{1}{4}$ of the males. If no person married more than once, how many of the town's residents are female? (2) 1997-WU10-2

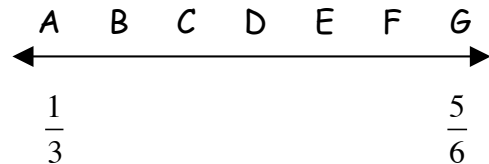
29) Solve for x : $0.\overline{5}x = 10$. (2) 1997-WU11-5

30) Express $0.1\overline{73}$ as a common fraction. (3) 1997-WU13-9

31) Simplify: $5 + \frac{5}{5 + \frac{1}{5}}$. (1) 1997-WU19-2

32) What is the value of the expression $\left(1 - \frac{1}{2}\right)\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right)\dots\left(1 - \frac{1}{n+1}\right)$ when $n = 12$? (1) 2001-WU9-7

33) The points A through G are evenly spaced on the number line. If $A = \frac{1}{3}$ and $G = \frac{5}{6}$ what is the value at point C ? (1) 2001-WU12-2



34) Calculate $\frac{1}{4} \cdot \frac{2}{5} \cdot \frac{3}{6} \cdot \frac{4}{7} \cdot \dots \cdot \frac{49}{52} \cdot \frac{50}{53}$. (1) 2001-WO3-3

35) One-fourth of Madison High School's students are seniors, one-third are juniors, and the other 300 students are sophomores. Of the seniors, two-fifths are boys. How many senior girls are students at Madison High School? (2) 2001-WO7-1

36) A small hose can fill a swimming pool in 16 hours. A large hose connected to a different water supply fills the same pool in 12 hours. With the pool empty, the owner turns on the smaller hose at 8:00 a.m. He turns on the larger hose at 10:00 a.m. Both hoses are used from 10:00 a.m. to 3:00 p.m. What fraction of the pool is full at 3:00 p.m.? (3) 2001-WO9-2

37) The sum of two positive integers is 11. What is the smallest possible sum of their reciprocals? (1) 1996-WU3-8

38) What number can be added to both the numerator and denominator of $\frac{3}{5}$ so that the resulting fraction will be equivalent to $\frac{5}{6}$? (2) 1996-WU7-9

39) Jack spent $\frac{4}{17}$ of his money for the movies, he then spent $\frac{7}{13}$ of the remainder for books. He used $\frac{2}{3}$ of what was then left for tapes. He had \$4 remaining for lunch. How much money did Jack spend for books? (2) 2001-WO7-9

40) One-third of a social studies class gave their reports on Monday, one-fourth of the class gave their reports on Tuesday, one-fifth of the class gave their reports on Wednesday and 3 gave their reports on Thursday. If the remaining one-sixth of the class gave their reports on Friday, how many students were in the class? (1) 1993-WU5-1

41) On a number line, the coordinate of point x is $-18\frac{1}{2}$ and the coordinate of y is $21\frac{1}{2}$. What is the coordinate of z if the distance between x and z is one-third of the distance between z and y? (1) 1993-WU7-6

42) On a number line, what common fraction corresponds to the point that is $\frac{2}{3}$ of the distance between $\frac{2}{3}$ and 1? (2) 1993-WU13-1

43) Find an ordered pair (x, y) of even integers with $x < y$ and $\frac{1}{x} + \frac{1}{y} = \frac{1}{4}$. (2)
1993-WO10-9

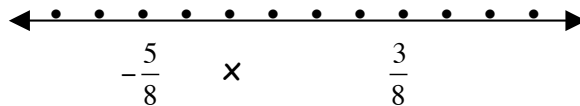
44) Find the largest integral value of x which solves: (1) 1995-WU1-2

$$\frac{1}{3} < \frac{x}{5} < \frac{5}{8}$$

45) How many positive integers k will make the expression $\frac{19}{k} + \frac{5}{k}$ have an integral value? (2) 1995-WU7-3

46) Carlos had a bag of gum drops. He gave $\frac{1}{4}$ of them to Monica, then gave half of what was left to Michael, then gave $\frac{1}{6}$ of what was left to Ingrid. He then had 20 gumdrops left. How many did he have originally? (3) 1995-WU7-10

47) Find the value of the common fraction x on the number line shown, given that the dots are evenly spaced. (2) 1995-WU11-2



48) Deb's 16-ounce mug is filled with cocoa powder and Harry's 16-ounce mug is empty. Deb pours one-third of the cocoa powder from his mug into Harry's, then fills Harry's mug to the top with milk. Harry stirs his mixture, then pours enough back into Deb's mug to fill it. Find the number of ounces of cocoa powder now in Deb's mug. (3) 1995-WU20-7

**Fractions – Answer
Key**

1) 24	22) $243/8$	45) 8
2) $1\ 5/14$	23) $7/24$	46) 64
3) $1/2$	24) $1/668$	47) $-7/24$
4) 120	25) $65/48$	48) $12\ 4/9$ ozs
5) 5	26) 44	
6) $-3\ 1/7$	27) $5/14$	
7) $4/3$	28) 4,800	
8) 15,000	29) 18	
9) $10\ 5/8\ in^2$	30) $86/495$	
10) \$300	31) $155/26$	
11) 950	32) $1/13$	
12) 17	33) $1/2$	
13) 53	34) $1/23426$	
14) $29/19$	35) 108	
15) 1	36) $41/48$	
16) 11.4	37) $11/30$	
17) $11/12$	38) 7	
18) $1/8$	39) \$14	
19) 105	40) 60	
20) 64	41) $-8\frac{1}{2}$	
21) 64	42) $8/9$	
	43) (6, 12)	
	44) 3	