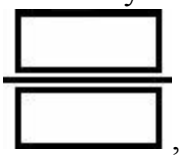
Fractions and Decimals

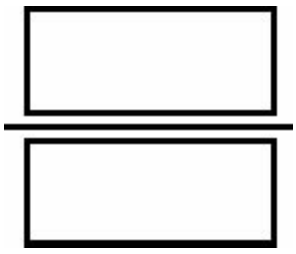
For questions in the Quantitative Comparison format ("Quantity A" and "Quantity B" given), the answer choices are always as follows:

(A) Quantity A is greater.
(B) Quantity B is greater.
(C) The two quantities are equal.
(D) The relationship cannot be determined from the information given.

For questions followed by a numeric entry box  , you are to enter your own answer in the box. For questions followed by fraction-style numeric entry boxes  , you are to enter your answer in the form of a fraction. You are not required to reduce fractions. For example, if the answer is 1/4, you may enter 25/100 or any equivalent fraction.

All numbers used are real numbers. All figures are assumed to lie in a plane unless otherwise indicated. Geometric figures are not necessarily drawn to scale. You should assume, however, that lines that appear to be straight are actually straight, points on a line are in the order shown, and all geometric objects are in the relative positions shown. Coordinate systems, such as *xy*-planes and number lines, as well as graphical data presentations such as bar charts, circle graphs, and line graphs, *are* drawn to scale. A symbol that appears more than once in a question has the same meaning throughout the question.

1. $\frac{1}{2}+\frac{2}{3}+\frac{3}{4}+\frac{4}{5}+\frac{5}{6}=$



2.

Quantity A	**Quantity B**
$-\frac{3}{4}+\frac{2}{3}$	$-\frac{3}{4}\times\frac{2}{3}$

3. The temperature in Limerick is 3/4 that in Cairo, where the temperature is 8/5 that in Halifax. If the temperature in

Limerick is 60°, what is the temperature in Halifax?

(A) 50°
(B) 55°
(C) 64°
(D) 72°
(E) 75°

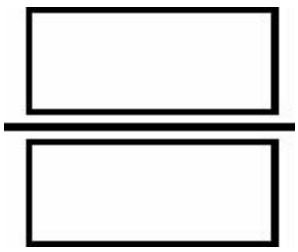
4. At a convention of monsters, 2/5 have no horns, 1/7 have one horn, 1/3 have two horns, and the remaining 26 have three or more horns. How many monsters are attending the convention?

(A) 100
(B) 130
(C) 180
(D) 210
(E) 260

5. One dose of secret formula is made from 1/6 ounce of Substance X and 2/3 ounce of Substance Z. How many doses are in a 30-ounce vial of secret formula?

(A) 20
(B) 24
(C) 30
(D) 36
(E) 45

6. Devora spends 1/4 of her money on a textbook, and then buys a notebook that costs 1/6 the price of the textbook. Assuming she makes no other purchases, what fraction of her money does Devora have left over?



7. 0.003482 =

Indicate <u>all</u> such statements.

☐ -0.003482×10^{-1}
☐ 0.3482×10^{-2}
☐ 34.82×10^{4}
☐ 34.82×10^{-4}
☐ $3{,}482 \times 10^{-6}$

8. 12.12×10^{-3} =

Indicate <u>all</u> such statements.

☐ -1.21×10^{3}

☐ 0.012
☐ 0.00001212×10^3
☐ 0.01212×10^3

9. 5 is how many fifths of 10?

(A) 2.5
(B) 5
(C) 10
(D) 20
(E) 50

10.

$x > 0$ and $y > 0$

Quantity A	**Quantity B**
$\frac{1}{x}+\frac{1}{y}$	$\frac{xy}{x+y}$

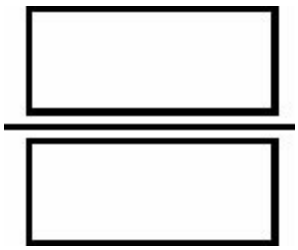
11.

Quantity A	**Quantity B**
$\frac{75}{4^2}\times\frac{3^2}{45}\times\frac{2^4}{45}$	$\frac{3^2}{4^2}\times\frac{2^2}{5^2}\times\frac{10}{3}$

12. 5/12 of all the students are girls and 1/4 of all the students are girls who take Spanish. What fraction of the girls take Spanish?

(A) 5/48
(B) 5/12
(C) 2/5
(D) 3/5
(E) 7/12

13. 1/5 of all the cars on a certain auto lot are red, and 2/3 of all the red cars are convertibles. What fraction of all the cars are NOT red convertibles?



14. Two identical pies are cut into a total of 16 equal parts. If each part is then split equally among three people, what fraction of a pie does each person receive?

(A) 1/48

(B) 1/24
(C) 1/16
(D) 3/16
(E) 3/8

15. Which of the following are bigger than twice 21/49?

Indicate <u>all</u> such values.

☐ 0.84
☐ 0.857
☐ 0.858
☐ 0.86

16.

$$xy \neq 0$$

Quantity A	**Quantity B**
$2+\frac{1}{xy}$	$\frac{2xy+1}{xy}$

17.

Quantity A	**Quantity B**
$\frac{\frac{1}{4}}{\frac{2}{3}-\frac{1-2}{\frac{1}{3}}}$	$\frac{\frac{1}{3}}{\frac{1}{4}-\frac{3-4}{\frac{2}{3}}}$

18.

At Store A, 3/4 of the apples are red.
At Store B, which has twice as many apples, 0.375 of them are red.

Quantity A	**Quantity B**
The number of red apples at Store A	The number of red apples at Store B

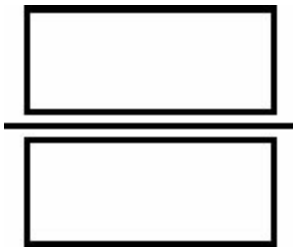
19.

Dweezil has one third the number of black marbles that Gina has, but he has twice as many white marbles.
Both people have only black marbles and white marbles.

Quantity A	**Quantity B**

The number of marbles Dweezil has The number of marbles Gina has

20. A pot of soup is divided equally into two bowls. If Manuel eats 1/4 of one of the bowls of soup and 2/5 of the other bowl of soup, how much of the soup did Manuel eat?



21. What is half of $\frac{x^2}{8}$?

(A) $\frac{x}{4}$
(B) $\frac{x^2}{4}$
(C) $\frac{x}{8}$
(D) $\frac{x^2}{16}$
(E) It cannot be determined.

22. $\frac{\frac{ab}{c}}{\frac{cd}{a}} =$

(A) ac
(B) bd
(C) $\frac{1}{bd}$
(D) $\frac{a^2b}{c^2d}$
(E) $\frac{ab^2}{cd^2}$

23. $\left(\frac{\sqrt{12}}{5}\right)\left(\frac{\sqrt{60}}{2^4}\right)\left(\frac{\sqrt{45}}{3^2}\right) =$

(A) $\frac{1}{12}$

(B) $\frac{1}{6}$

(C) $\frac{1}{4}$

(D) $\frac{1}{3}$

(E) $\frac{1}{2}$

24. $\frac{-1}{2x}-\frac{1}{4y}+\frac{1}{xy}+\frac{1}{8}=$

(A) $\frac{(x-4)(2-y)}{8xy}$

(B) $\frac{(x-2)(y-4)}{8xy}$

(C) $\frac{(x-4)(y-2)}{8xy}$

(D) $\frac{(x+2)(4-y)}{8xy}$

(E) $\frac{(x-2)(4-y)}{8xy}$

25.

x is a digit in the decimal 12.15x9, which, if rounded to the nearest hundredth, would equal 12.16.

Quantity A	**Quantity B**
x	4

26. $\frac{\frac{a}{b}}{\frac{c}{d}+\frac{e}{f}}=$

(A) $\frac{acd}{bcf+def}$

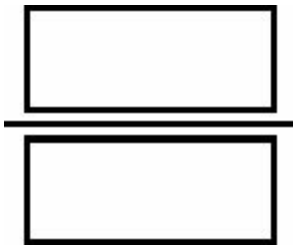
(B) $\frac{ace}{bdf+bcd}$

(C) $\frac{acf}{bde+cdf}$

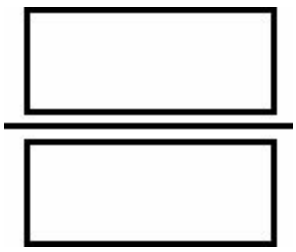
(D) $\frac{ade}{bef+cdf}$

(E) $\frac{adf}{bcf+bde}$

27. $\frac{(17^2)(22)(38)(41)(91)}{(19)(34)(123)(11)(119)(26)} =$



28. In a decimal number, a bar over one or more consecutive digits means that the pattern of digits under the bar repeats without end. As a fraction, $7.58\overline{3} =$



29.

Quantity A	**Quantity B**
$\left(\frac{\sqrt{25}}{\sqrt{10}}\right)\left(\frac{\sqrt{8}}{\sqrt{15}}\right)$	$\left(\frac{\sqrt{51}}{\sqrt{46}}\right)\left(\frac{\sqrt{23}}{\sqrt{34}}\right)$

$\sqrt{\frac{3}{2}} - \sqrt{\frac{2}{3}} =$

(A) $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{6}}$

(B) $\frac{1}{\sqrt{6}}$

(C) $\frac{\sqrt{3}}{3}$

(D) $\frac{\sqrt{3}}{2}$

(E) $\frac{\sqrt{5}}{\sqrt{6}}$

31. If $abc \neq 0$, then $\frac{ab}{cb} + \frac{a}{c} - \frac{a^2b^3}{abc} =$

(A) $\frac{a-b^2}{c}$

(B) $\frac{a^2-2b^2}{c}$

(C) $\frac{2a^2-b^2}{c}$

(D) $\frac{a\left(2-b^2\right)}{c}$

(E) $\frac{a^2b\left(2-b^2\right)}{c}$

32. If 3/4 of all the cookies have nuts and 1/3 of all the cookies have both nuts and fruit, what fraction of all the cookies have nuts but no fruit?

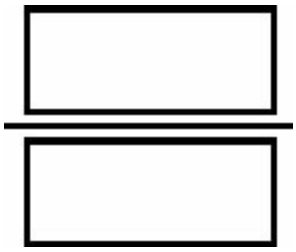
(A) 1/4
(B) 5/12
(C) 1/2
(D) 7/12
(E) 5/6

33. 1/4 of all the juniors and 2/3 of all the seniors are going on a trip. If there are 2/3 as many juniors as seniors, what

fraction of the students are not going on the trip?

(A) 4/9
(B) 1/2
(C) 2/3
(D) 1/3
(E) 5/6

34. 4/5 of the women and 3/4 of the men speak Spanish. If there are 40% as many men as women, what fraction of the group speaks Spanish?



35.

$abcd \neq 0$

Quantity A	**Quantity B**
$\frac{a^2b}{cd^2} \times \frac{d^3}{abc}$	$\frac{d^2}{bc} \times \frac{ab^2}{bd}$

36.

Quantity A	**Quantity B**
$\frac{24}{3\sqrt{2}} - \frac{4}{\sqrt{2}}$	$\sqrt{6}$

37.

$m \neq 0$

Quantity A	**Quantity B**
$\left(\frac{1}{2} + \frac{1}{m}\right)(m+2)$	$\frac{(m+2)^2}{2m}$

38.

The reciprocal of x's non-integer decimal part equals $x + 1$, and $x > 0$.

Quantity A	**Quantity B**
x	$\sqrt{2}$

39. Which two of the following numbers have a sum between 1 and 2?

Indicate <u>both</u> of the numbers.

- ☐ $\frac{7(2^3)}{3^3-7}$
- ☐ $\frac{2^4}{1+2+3+4}$
- ☐ $\frac{3}{11} \div \frac{6}{11}$
- ☐ $\frac{-2^3 3^2}{2^2 5^2}$
- ☐ $\frac{-11^2-11^3}{(30)(44)}$

40. Which three of the following answers, when multiplied by each other, yield a product less than -1?

Indicate <u>all three</u> numbers.

- ☐ $\frac{-15}{17}$
- ☐ $\frac{-18}{19}$
- ☐ $\frac{23}{-22}$
- ☐ $\frac{17}{-16}$

41. The decimal representation of the reciprocal of integer *n* contains an infinitely repeating pattern of digits, expressed with a bar over the repeating digits. The minimum length of the bar (in digits) is *n* - 1.

Indicate <u>all</u> of the integers below that could be *n*.

- ☐ 3
- ☐ 5
- ☐ 7
- ☐ 9
- ☐ 11

42. $(3-\frac{1}{3})^2+(3+\frac{1}{3})^2=$

(A) 122/9
(B) 164/9
(C) 36
(D) 164/3
(E) 162

43. If $\frac{3}{\frac{m+1}{m}+1}=1$, then m must equal

(A) -2
(B) -1
(C) 0
(D) 1
(E) 2

44.

$$rs=\sqrt{3}$$

Quantity A	**Quantity B**
$\frac{2r\sqrt{12}}{r^2s\sqrt{72}}$	$\frac{14rs^2}{42s}$

45.

Quantity A	**Quantity B**
$\frac{\sqrt{10}}{\sqrt{8}}\div\frac{\sqrt{9}}{\sqrt{10}}$	$\frac{\sqrt{11}}{\sqrt{9}}\div\frac{\sqrt{10}}{\sqrt{11}}$

46.

$$\frac{x}{m}>0$$

Quantity A	**Quantity B**
$\frac{11m+17x}{11m}$	$\frac{17m+11x}{17m}$

47. Which of the following fractions has the greatest value?

(A) $\frac{7}{(16^2)(25)}$

(B) $\frac{5}{(32)(5^4)}$

(C) $\frac{30}{(512)(5^3)}$

(D) $\frac{5}{(4^6)(5)}$

(E) $\frac{4}{(2^{11})(5^2)}$

48.

$$\frac{m}{p} > \frac{n}{p}$$

Quantity A	**Quantity B**
m	n

49. If $2x \neq y$ and $5x \neq 4y$, then

$$\frac{\frac{5x-4y}{2x-y}}{\frac{3y}{y-2x}+5} =$$

(A) $\frac{1}{2}$

(B) $\frac{3}{2}$

(C) $\frac{5}{2}$

(D) $\frac{7}{2}$

(E) $\frac{9}{2}$

50. $\frac{39^2}{2^4} \div \frac{13^3}{4^2} =$

(A) $\frac{13}{2}$

(B) $\frac{9}{2}$

(C) $\frac{3}{2}$

(D) $\frac{3}{13}$

(E) $\frac{9}{13}$

51. To the nearest integer, the non-negative fourth root of integer n rounds to 3. Inclusive, n is between

(A) 0 and 1
(B) 2 and 3
(C) 4 and 9
(D) 10 and 39
(E) 40 and 150