

TEST A CHAPTER 5, NUMBER THEORY AND THE REAL NUMBERS

_____ 1. Find a rational number with a denominator of 28 and equal to $\frac{3}{4}$.

_____ 2. Find the reciprocal of:

_____ a. $\frac{5}{7}$

_____ b. $-\frac{4}{5}$

_____ c. $3\frac{7}{16}$

_____ d. - 14

_____ 3. Perform the indicated operations:

_____ a. $(-\frac{4}{9}) \times \frac{11}{18}$

_____ b. $(-\frac{4}{9}) \div (-\frac{11}{18})$

_____ 4. Write as decimals:

_____ a. $\frac{5}{8}$

_____ b. $\frac{5}{6}$

_____ 5. Write in simplest form as the quotient of two Integers:

_____ a. $0.\overline{63}$

_____ b. 3.2555 . . .

_____ 6. Write:

_____ a. 50.0601 in expanded form.

_____ b. $4 \times 10^3 + 5 \times 10^2 + 2 \times 10^{-1} + 5 \times 10^{-3}$ in decimal form.

- _____ 7. Do the following calculation and write the answer in scientific notation:
 $(9 \times 10^5) \times (6 \times 10^{-9})$
- _____ 8. Which of the following numbers is (are) irrational?
 $\sqrt{36}$, $\sqrt{42}$, $\sqrt{144}$, 2.131313 . . . ,
0.2020020002
- _____ 9. a. Find a rational number between $0.\overline{2}$ and 0.25.
_____ b. Find an irrational number between $0.\overline{2}$ and 0.25.
- _____ 10. The diameter of a circle is 4 inches. To the nearest tenth of an inch what is the circumference of this circle? (Use $\pi \approx 3.14$.)
- _____ 11. Tell whether the underlined item is used as a cardinal number, an ordinal number, or for identification.
_____ a. Joe came third in the election.
_____ b. Susan's lottery ticket won five dollars.
_____ c. Bill's auto license number was 272-864.
- _____ 12. What properties of the system of natural numbers are used in the following equations
_____ a. $(7 + 6) + 3 = (7 + 3) + 6$
_____ b. $9(10 + 3) = 90 + 27$
_____ c. $(2 \times 39) \times 5 = (2 \times 5) \times 39$
- _____ 13. Write 286 as a product of primes.
- _____ 14. Write the prime numbers between 40 and 50.

- _____ 15. Is 123 prime or composite?
- _____ 16. Consider the numbers 6345, 718, 849, 1650
Identify the numbers divisible by:
- _____ a. 2
- _____ b. 3
- _____ c. 5
- _____ 17. Find the GCF of 135, and 225 and reduce the
fraction $\frac{135}{225}$ to lowest terms.
- _____ 18. Find the LCM of 90, 135 and 225 and perform
the indicated operations:
- $$\frac{1}{90} + \frac{1}{225} - \frac{1}{135}$$
- _____ 19. What fractional part of Julian's budget goes
for entertainment if $\frac{3}{5}$ of his budget is for
school expenses, $\frac{1}{5}$ is for gasoline, $\frac{1}{20}$ is
for savings and the remainder is for enter-
tainment?
- _____ 20. Evaluate: $6 \times 12 \div 4 \times 10^4 - 2(-8 + 4) \times 10^3$
- _____ 21. Perform the indicated operations:
- _____ a. $4.35 + 5.7$
- _____ b. $8.32 - 4.73$
- _____ c. 0.39×5.6
- _____ d. $16.74 \div 5.4$
- _____ 22. The three sides of a triangle are measured as
18.4, 6.68, and 19.66 cm, respectively. What
is the perimeter of this triangle? (Give the
answer to the correct number of places.)

- _____ 23. The dimensions of a rectangular court are measured as 83.6 by 50.5 feet. What is the area of this court? (Give the answer to the correct number of places.)
- _____ 24. The circumference of a ball is measured as 11.5 inches. What is the diameter of this ball? (Use $\pi \approx 3.14$ and give the answer to the correct number of places.)
- _____ 25. Write as a decimal:
_____ a. 23%
_____ b. 5.75%
_____ c. 0.34%
- _____ 26. Write as a percent:
_____ a. 0.54
_____ b. 2.43
_____ c. $\frac{3}{5}$
_____ d. $\frac{5}{9}$ (Answer to one decimal place.)
- _____ 27. A 2-liter bottle of soda sells for 69 cents and costs the store 49 cents. Find the percent of profit, correct to two decimal places.
- _____ 28. 50 of the employees of Company A make between \$25,000 and \$50,000 annually. If this represents 20% of the company's employees, how many employees does Company A have?
- _____ 29. Simplify as much as possible:
_____ a. $\sqrt{338}$
_____ b. $\sqrt{73}$
_____ c. $\frac{4}{\sqrt{48}}$
_____ d. $\sqrt{\frac{128}{49}}$

30. Perform the indicated operations and simplify:

- a. $\sqrt{15} \times \sqrt{5}$
- b. $\frac{\sqrt{72}}{\sqrt{8}}$
- c. $\sqrt{54} - \sqrt{24}$
- d. $\sqrt{48} + \sqrt{18} - \sqrt{12}$

31. For a right triangle with sides of length a, b and hypotenuse c, $c^2 = a^2 + b^2$. If the sides of a right triangle are 6 and 9 inches long, what is the length of the hypotenuse? Simplify your answer.

32. Classify the given numbers by making a check mark in the appropriate row:

Number Set	$\sqrt{8}$	-0.19	$\sqrt{2.5}$	0.666...	$-2\frac{1}{2}$
Natural					
Integers					
Rational					
Irrational					
Real					

33. Classify as an arithmetic or a geometric sequence:

- a. 3, 6, 12, 24, ...
- b. 4, 7, 10, 13, ...

34. For the sequence 6, 9, 12, 15, . . . , find:

- a. The first term
- b. The common difference
- c. The sum of the first ten terms
- d. The sum of the first n terms

35. For the sequence $4, -2, 1, -\frac{1}{2}, \dots$, find:

- a. a_1
- b. r
- c. The sum of the first five terms.
- d. The sum of the first n terms

36. Use the sum of an infinite geometric sequence to write the following repeating decimals as fractions in lowest terms:

- a. $0.888\dots$
- b. $1.121212\dots$
- c. $2.777\dots$

TEST B CHAPTER 5, NUMBER THEORY AND THE REAL NUMBERS

1. A rational number between $0.\overline{2}$ and 0.25 is
 - a. 0.222 . . .
 - b. 0.232332333 . . .
 - c. 0.24567 . . .
 - d. 0.22333 . . .
 - e. 0.24999 . . .

2. The diameter of a circle is 4 inches. To the nearest tenth of an inch, what is the circumference of this circle? (Use $\pi \approx 3.14$.)
 - a. 12.6 in.
 - b. 12.56 in.
 - c. 12.5 in.
 - d. 12 in.
 - e. None of these

3. $0.39 \times 5.6 =$
 - a. 2.2
 - b. 2.20
 - c. 2.19
 - d. 2.18
 - e. 2.184

4. The three sides of a triangle are measured as 18.4, 6.68, and 19.66 centimeters long, respectively. What is the perimeter of the triangle?
 - a. 45 cm
 - b. 44.8 cm
 - c. 44.74 cm
 - d. 44.70 cm
 - e. 44 .7 cm

5. The dimensions of a rectangular court are measured to be 83.6 by 50.5 feet. What is the area of this court?
 - a. 4200 sq ft
 - b. 4222 sq ft
 - c. 4221.8 sq ft
 - d. 4220 sq ft
 - e. 4221.80 sq ft

6. The circumference of a ball is measured as 11.5 in. What is the diameter of this ball? (Use $\pi \approx 3.14$.)
 - a. 3.662 in.
 - b. 3.7 in.
 - c. 3.66 in.
 - d. 3.6624 in.
 - e. None of these

7. Written as a decimal, 5.75% is
 - a. 0.575
 - b. 0.00575
 - c. 0.0575
 - d. 5.75
 - e. None of these

8. Written as a percent, correct to one decimal place, $\frac{5}{9}$ is
 - a. 0.6%
 - b. 5.6%
 - c. 56%
 - d. 55.6%
 - e. None of these

9. A 2-liter bottle of soda sells for 69 cents and costs the store 49 cents. Find the percent of profit, correct to two decimal places.
 - a. 28%
 - b. 40.82%
 - c. 28.99%
 - d. 40.80%
 - e. None of these

10. 50 of the employees of Company A make between \$25,000 and \$50,000 annually. If this represents 20% of all the employees, how many employees does Company A have?
- a. 200 b. 250 c. 500
d. 400 e. None of these
11. In simplified form, $\sqrt{648} =$
- a. $2\sqrt{162}$ b. $9\sqrt{8}$ c. 25.5
d. $18\sqrt{2}$. e. None of these
12. In simplified form, $\sqrt{\frac{128}{49}} =$
- a. $\frac{16}{\sqrt{98}}$ b. $\frac{\sqrt{128}}{7}$ c. $4\sqrt{\frac{8}{49}}$
d. $\frac{16}{7\sqrt{2}}$ e. $\frac{8\sqrt{2}}{7}$
13. In simplified form, $\sqrt{15} \times \sqrt{5} =$
- a. $\sqrt{75}$ b. $3\sqrt{5}$ c. $5\sqrt{3}$
d. $\sqrt{20}$ e. None of these
14. $\sqrt{48} + \sqrt{18} - \sqrt{12} =$
- a. $\sqrt{66} - \sqrt{12}$ b. $3\sqrt{2} + 2\sqrt{3}$ c. $3\sqrt{6}$
d. $\sqrt{48} + \sqrt{6}$ e. None of these
15. Which one of the following is an arithmetic sequence?
- a. 2, 3, 5, 8,b. 4, 8, 16, 32, c. 2, 5, 8, 11,
d. 1, 0, 1, 0, e. 0, 2, 3, 7,
16. The sum of the first ten terms of the sequence 2, 5, 8, 11, is
- a. 185 b. 155 c. 220
d. 370 e. None of these

17. For the sequence $1, -\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}, \dots$, which of the following is correct? (Note: S_6 means the sum of the first six terms.)
- a. $r = -\frac{1}{2}, S_6 = -\frac{21}{32}$ b. $r = \frac{1}{2}, S_6 = \frac{63}{32}$ c. $r = -\frac{1}{2}, S_6 = \frac{21}{32}$
d. $S_6 = -\frac{3}{2}$ e. None of these
18. The repeating decimal $1.888\dots =$
- a. $1\frac{888}{1000}$ b. $\frac{17}{9}$ c. $\frac{236}{125}$
d. 1.89 e. None of these
19. The underlined word in the sentence "This is the fifth test." is used as:
- a. a cardinal number b. an ordinal number
c. identification d. a natural number
e. None of these
20. What addition properties of the system of natural numbers are used in the equation: $7 + 6 + 3 = 7 + 3 + 6 = (7 + 3) + 6$?
- a. Associativity only
b. Commutativity only
c. The distributive property only
d. The associative and the distributive properties only
e. Commutativity and associativity only
21. Written as a product of primes, $286 =$
- a. $2 \cdot 143$ b. $2 \cdot 11 \cdot 13$ c. $1 \cdot 2 \cdot 11 \cdot 13$
d. $22 \cdot 13$ e. None of these
22. All the prime numbers between 50 and 60 are:
- a. 51, 53 and 57 b. 53 and 59 c. 51, 57 and 59
d. 53 and 57 e. None of these
23. The number 123 is:
- a. a prime number b. a composite number
c. an even number d. neither prime nor composite
e. None of these
24. The number 45 is divisible by:
- a. 5 only b. 1, 3, and 5 only c. 1, 3 and 15 only
d. 1, 3, 5, 9, and 15 only e. 1, 3, 5, 9, 15 and 45 only

25. The GCF of 135 and 225 is
 a. 3 b. 5 c. 15 d. 45 e. 9
26. When written in simplest reduced form $\frac{135}{225} =$
 a. $\frac{9}{15}$ b. $\frac{15}{25}$ c. $\frac{3}{5}$ d. $\frac{45}{75}$ e. None of these
27. The LCM of 12, 24 and 30 is
 a. 2 b. 3 c. 6 d. 30 e. 120
28. When written in simplest reduced form, $\frac{5}{12} + \frac{7}{24} - \frac{7}{30} =$
 a. $\frac{57}{120}$ b. $\frac{1}{3}$ c. 0 d. $\frac{19}{40}$ e. $\frac{38}{80}$
29. A pattern for a wedding outfit calls for $17\frac{1}{3}$ yards of lace trim for the dress and $6\frac{1}{2}$ yards of lace trim for the veil. How many yards of lace trim does the pattern call for?
 a. $17\frac{5}{6}$ yd b. $10\frac{5}{6}$ yd c. $23\frac{5}{6}$ yd
 d. $18\frac{2}{3}$ yd e. None of these
30. $-4 - (-12) =$
 a. 6 b. -16 c. 8
 d. -8 e. None of these
31. $48 \div 8 \times 3 + 19 =$
 a. 126 b. 21 c. 37 d. 1.12 e. None of these
32. The reciprocal of $-\frac{5}{7}$ is:
 a. $\frac{7}{5}$ b. $-\frac{7}{5}$ c. $\frac{5}{7}$ d. $-(-\frac{5}{7})$ e. None of these

33. $(-\frac{4}{9}) \div (\frac{11}{18}) =$
- a. $-\frac{44}{162}$ b. $-\frac{162}{44}$ c. $\frac{8}{11}$
d. $-\frac{8}{11}$ e. None of these
34. Written as a decimal, $\frac{5}{6} =$
- a. 0.833 b. $0.\overline{83}$ c. $0.\overline{8}$
d. $0.8\frac{1}{3}$ e. None of these
35. Written as the quotient of two integers $0.\overline{63} =$
- a. $\frac{63}{100}$ b. $\frac{7}{11}$ c. $\frac{21}{32}$
d. 0.636363 . . . e. None of these
36. Written in standard decimal notation, $3.86 \times 10^6 =$
- a. 3,860,000 b. $386 \times 10,000$ c. 386,000
d. $386 \times 100,000$ e. None of these
37. In scientific notation, $(9 \times 10^5) \times (6 \times 10^{-9}) =$
- a. 54×10^{-4} b. 54×10^{-45} c. 5.4×10^{-3}
d. 1.5×10^{-4} e. None of these
38. Which one of the following numbers is irrational?
- a. $\sqrt{36}$ b. $\sqrt{42}$ c. $\sqrt{144}$
d. 2.131313 . . . e. 0.2020020002