Pennsylvania College of Technology

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Pre-Algebra
Practice Math Placement Exam

- This 24-question practice exam measures your ability to perform basic operations and solve problems that involve pre-algebra skills and concepts.
- Although you may use a basic four-function, scientific, or graphing calculator, it is possible to solve every question without a calculator.
- **Do not make random guesses**. If you have **NO KNOWLEDGE** of the question, you should leave the answer blank. If you have some knowledge, you may be able to narrow choices and intelligently select the correct answer.
- You should do your best on this test so that your score reflects your knowledge of mathematics. This result, in turn, allows placement into a math course for which you are prepared and should enable your successful completion of that course.

Pennsylvania College of Technology
Mathematics Department
Pre-Algebra Practice Placement Exam

1. A basketball court is 84 feet by 50 feet. Find the perimeter of the court.

   a. 1050 ft.
   b. 4200 ft.
   c. 268 ft.
   d. 134 ft.

2. Which of the following is the correct first step to evaluate the numerical expression $18-2\cdot 3(4+12\div 6)$?

   a. Add: $4+12$
   b. Subtract: $18-2$
   c. Multiply: $2\cdot 3$
   d. Divide: $12\div 6$

3. The number of hours worked by each of 7 employees at Big-n-Juicy Hamburgers during the past month are as follows: 75, 63, 76, 82, 70, 81, and 149. Find the average number of hours worked; round to the nearest hour.

   a. 85.14 hours
   b. 85 hours
   c. 86 hours
   d. None of these

4. A rectangular sheet cake is cut into 24 equal pieces. After 10 pieces are served at lunch and 8 pieces are served at dinner, what fraction of the cake is left?

   a. $\frac{1}{4}$
   b. $\frac{3}{4}$
   c. $\frac{2}{3}$
   d. $\frac{1}{3}$

5. In which of the following problems is the Least Common Denominator (LCD) needed to solve the problem?

   a. $\frac{1}{4}+\frac{2}{3}$
   b. $\frac{7}{8}\cdot\frac{2}{5}$
   c. $\frac{5}{9}\div\frac{4}{3}$
   d. All of these

6. Divide and reduce to lowest terms: $\frac{15}{12} \div \frac{3}{4}$

   a. $\frac{5}{3}$

   b. $\frac{60}{36}$

   c. $\frac{45}{36}$

   d. $\frac{5}{36}$

7. When dividing two fractions, what should you do first?

   a. Multiply by the divisor.

   b. Find the common denominator of the two fractions.

   c. Divide the denominators.

   d. Multiply by the reciprocal of the divisor.

8. Two mixed numbers, such as $3\frac{2}{5}$ and $2\frac{1}{7}$, must be converted to improper fractions when performing which of the following operations?

   a. Addition

   b. Division

   c. Subtraction

   d. All operations

9. Amy Folsom had a small pickup truck that can carry $\frac{5}{8}$ cord of firewood. Find the number of trips needed to deliver 40 cords of wood.

   a. 27

   b. 7

   c. 25

   d. 64

10. Write "*two hundred six ten-thousandths"* in standard form.

    a. 2.06

    b. 0.206

    c. 0.0206

    d. 200.0006

11. Arrange the following numbers in order from least to greatest: 1.17, 1.070, 1.117, 1.71

a. 1.070, 1.17, 1.117, 1.71

b. 1.070, 1.117, 1.17, 1.71

c. 1.17, 1.070, 1.117, 1.71

d. 1.17, 1.070, 1.71, 1.117

12. Which of the following operations finds the value of x that makes the equation a true statement:

$17.683 - x = 5.558$

a. $17.683 + 5.558$

b. $17.683 \div 5.558$

c. $5.558 \cdot 17.683$

d. $17.683 - 5.558$

13. Jeff is paid $7.50 per hour for all regular hours worked in a 40-hour work week. For any overtime hours he is paid time and a half or 1.5 times his regular hourly wage. If Jeff works 3 hours and 15 minutes of overtime in a week, calculate his overtime pay for that week.

a. $35.44

b. $336.56

c. $36.56

d. $335.44

14. Which pair of ratios is equivalent?

a. 4 to 6 and 8 to 10

b. 5:6 and 15:18

c. 1:2 and 3:4

d. All are equivalent

15. The cost of adding a new room to a house was $2000 for labor and $9000 for materials. What is the ratio of the cost of the labor to the total cost of adding the new room? Express the answer as a fraction in simplest form.

a. $\frac{2}{11}$

b. $\frac{2}{9}$

c. $\frac{7}{11}$

d. $\frac{9}{11}$

16. A machine produces 50 items in 5 minutes. At the same rate, how many items will it produce in 4 hours?

a. 240

b. 40

c. 2400

d. None of these

17. If 16 ounces of laundry detergent costs $3.20, what is the cost of 20 ounces of the same laundry detergent? Which of the following proportions can be used to solve this problem?

a. $\frac{x}{20} = \frac{3.20}{16}$

b. $\frac{x}{16} = \frac{3.20}{20}$

c. $\frac{20}{x} = \frac{3.20}{16}$

d. $\frac{3.20}{x} = \frac{20}{16}$

18. Is $\frac{3}{8} = \frac{6}{11}$ a true proportion?

a. Yes, because $\frac{3+3}{8+3} = \frac{6}{11}$

b. Yes, because $3+11 = 6+8$

c. No, because $3+6 \neq 8+11$

d. No, because $3 \cdot 11 \neq 6 \cdot 8$

19. A lawn mower is marked down 55% to $279. Find the original selling price.

a. $153.45

b. $432.45

c. $620

d. $334

20. Which of the following fractions is less than $\frac{2}{3}$?

a. $\frac{5}{9}$

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

c. $\frac{4}{5}$

d. $\frac{13}{18}$

21. Which fraction is equivalent to 5%?

a. $\frac{1}{20}$

b. $\frac{1}{5}$

c. $\frac{0.5}{100}$

d. None of these

22. A $120 machining tool is on sale for 20% off. What is the sale price for the tool?

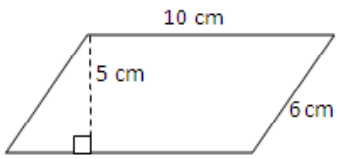
a. $24.00

b. $96.00

c. $100.00

d. None of these

23. What is the area of the parallelogram below?



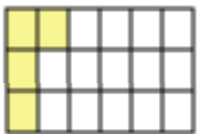
a. 300 cm^2

b. 60 cm^2

c. 32 cm^2

d. 50 cm^2

24. Name a fraction equivalent to the fraction that is modeled in the figure below.



a. $\frac{4}{11}$

b. $\frac{4}{17}$

c. $\frac{2}{9}$

d. $\frac{2}{18}$

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1. c.
2. d.
3. b.
4. a.
5. a.
6. a.
7. d.
8. b.
9. d.
10. c.
11. b.
12. d.
13. c.
14. b.
15. a.
16. c.
17. a.
18. d.
19. c.
20. a.
21. a.
22. b.
23. d.
24. c.