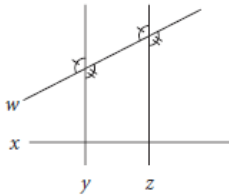


**► Part 4:  
Mathematics Knowledge**

Time: 24 minutes

1. Which of these lines are parallel?



- a.  $w$  and  $x$   
b.  $x$  and  $y$   
c.  $x$  and  $z$   
d.  $y$  and  $z$
2.  $5\frac{2}{3} - 2\frac{5}{7} =$
- a.  $8\frac{8}{21}$   
b.  $3\frac{3}{4}$   
c.  $2\frac{20}{21}$   
d.  $3\frac{1}{21}$
3. 35% of what number is equal to 14?
- a. 4  
b. 40  
c. 49  
d. 400
4.  $\frac{1}{4}$  is equal to
- a. 0.15.  
b. 0.25.  
c. 0.20.  
d. 0.75.
5. If  $8n + 25 = 65$ , then  $n$  is
- a. 5.  
b. 10.  
c. 40.  
d. 90.

# Answers

## Part 4: Mathematics Knowledge

1. d. The only parallel lines are  $y$  and  $z$ .
2. c. Change both mixed numbers to improper fractions before finding common denominators.  $\frac{17}{3} - \frac{19}{7}$ . Then, use 21 as your common denominator when subtracting.  $\frac{119}{21} - \frac{57}{21} = \frac{62}{21} = 2\frac{20}{21}$ .
3. b. Divide 14 by 35 and then multiply the answer by 100 to find the percent.
4. b. Divide 1 by 4 in order to convert the fraction into a decimal.  $1 \div 4 = 0.25$ .
5. a. The problem is solved by first determining that  $8n$  equals 40 and then dividing 40 by 8.

PRACTICE ASVAB CORE TEST 2

6. What is the reciprocal of  $3\frac{7}{8}$ ?

- a.  $\frac{31}{8}$
- b.  $\frac{8}{31}$
- c.  $\frac{8}{21}$
- d.  $-\frac{31}{8}$

7. Which of these sets of angles would make an isosceles triangle?

- a.  $80^\circ, 80^\circ, 100^\circ$
- b.  $90^\circ, 40^\circ, 50^\circ$
- c.  $50^\circ, 50^\circ, 50^\circ$
- d.  $70^\circ, 55^\circ, 55^\circ$

8. What is another way to write  $3\sqrt{12}$ ?

- a.  $12\sqrt{3}$
- b.  $6\sqrt{3}$
- c.  $2\sqrt{10}$
- d. 18

9. What is another way to write  $3^4$ ?

- a. 12
- b. 24
- c. 27
- d. 81

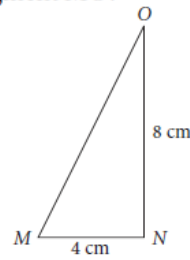
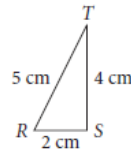
10. What is the decimal form of  $-1\frac{1}{3}$  rounded to the nearest hundredth?

- a. 1.33
- b. -1.33
- c. 3.67
- d. -3.67

11.  $2\frac{4}{5}$  is equal to which of the following?

- a. 2.45%
- b. 2.8%
- c. 2.8
- d. 2.45

12. Triangles  $RST$  and  $MNO$  are similar. What is the length of line segment  $MO$ ?



- a. 10 cm
- b. 20 cm
- c. 32 cm
- d. 40 cm

13. Put the following fractions in order of least to greatest:  $\frac{5}{6}, \frac{2}{7}, \frac{17}{20}, \frac{1}{3}$ .

- a.  $\frac{2}{7}, \frac{1}{3}, \frac{5}{6}, \frac{17}{20}$
- b.  $\frac{2}{7}, \frac{1}{3}, \frac{17}{20}, \frac{5}{6}$
- c.  $\frac{1}{3}, \frac{2}{7}, \frac{17}{20}, \frac{5}{6}$
- d.  $\frac{1}{3}, \frac{5}{6}, \frac{2}{7}, \frac{17}{20}$

14.  $0.40 =$

- a.  $\frac{1}{4}$
- b.  $\frac{1}{5}$
- c.  $\frac{2}{5}$
- d.  $\frac{3}{4}$

15. Which of the following expressions correctly demonstrates “three less than twice a number”?

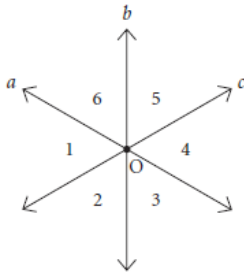
- a.  $3 - 2 + x$
- b.  $3 - 2x$
- c.  $3 < x^2$
- d.  $2x - 3$

## Answers

- 6. b.** Convert the mixed number  $3\frac{7}{8}$  to the improper fraction  $\frac{31}{8}$  and then invert.
- 7. d.** An isosceles triangle has two equal angles and one different angle, and its angles must sum to  $180^\circ$ .
- 8. b.** The square root of 12 is the same as the square root of 4 times 3, which is the same as the square root of 4 times the square root of 3. The square root of 4 is 2. So 3 times the square root of 12 is the same as 3 times 2 times the square root of 3.
- 9. d.**  $(3)(3)(3)(3) = 81$
- 10. b.**  $-1\frac{1}{3}$  is a mixed fraction and is equal to the whole number plus the fraction;  $-1\frac{1}{3} = -(1 + \frac{1}{3})$ . Convert  $\frac{1}{3}$  into a decimal by dividing 1 by 3;  $1 \div 3 = 0.33\bar{3}$ ; round this portion of the answer to the nearest hundredth, (two decimal places), to get 0.33;  $-(1 + 0.33) = -1.33$ .
- 11. c.**  $2\frac{4}{5} = \frac{14}{5} = 2.8$
- 12. a.** The dimensions of  $\triangle MNO$  are double those of  $\triangle RST$ . Line segment  $RT$  is 5 cm; therefore line segment  $MO$  is 10 cm.
- 13. a.** To compare two fractions, raise them up to a common denominator and then compare their numerators. For example,  $\frac{2}{7} = \frac{6}{21}$  and  $\frac{1}{3} = \frac{7}{21}$ , so  $\frac{1}{3}$  is greater than  $\frac{2}{7}$ .
- 14. c.** To convert a decimal into a fraction, first note the number of place positions to the right of the decimal point. In 0.4, the 4 is in the tenths place, which is one place to the right of the decimal point. Therefore, the fraction would be  $\frac{4}{10}$ . Now, the fraction needs to be reduced to its lowest terms. The number 2 is the greatest common factor of 4 and 10, so divide the numerator and denominator by 2. The final fraction is  $\frac{2}{5}$ .
- 15. d.** *Less than* means subtraction, but you must switch the order of the numbers being subtracted. *Twice* means multiplied by two. A *number* is represented by the variable  $x$ .

PRACTICE ASVAB CORE TEST 2

16. Lines  $a$ ,  $b$ , and  $c$  intersect at point  $O$ . Which of these pairs are NOT adjacent angles?



- a.  $\angle 1$  and  $\angle 6$   
 b.  $\angle 1$  and  $\angle 4$   
 c.  $\angle 4$  and  $\angle 5$   
 d.  $\angle 2$  and  $\angle 3$

17.  $2.25 =$

- a.  $2\frac{1}{4}$   
 b.  $2\frac{1}{5}$   
 c.  $\frac{2}{5}$   
 d.  $1\frac{3}{4}$

18.  $6^3$  is equal to

- a. 36.  
 b. 1,296.  
 c. 18.  
 d. 216.

19.  $10 + 40 \div 10 \times 2 =$

- a. 18  
 b. 10  
 c. 12  
 d.  $\frac{50}{20}$

20.  $0.125 =$

- a.  $\frac{1}{25}$   
 b.  $\frac{1}{8}$   
 c.  $\frac{2}{5}$   
 d.  $\frac{1}{5}$

21. One side of a square bandage is 4 inches long. What is the perimeter of the bandage?

- a. 4 inches  
 b. 8 inches  
 c. 12 inches  
 d. 16 inches

22. 33 is 12% of which of the following?

- a. 3,960  
 b. 396  
 c. 275  
 d. 2,750

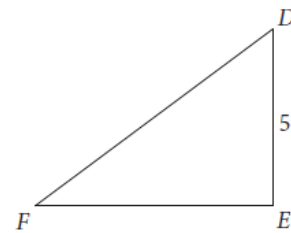
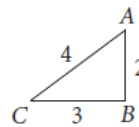
23. What is the area of a circle whose circumference is  $12\pi$ ?

- a.  $144\pi$   
 b.  $24\pi$   
 c.  $36\pi$   
 d.  $12\pi^2$

24.  $17^2$  is equal to

- a. 34.  
 b. 68.  
 c. 136.  
 d. 289.

25. If the two triangles below are similar, with  $\angle A$  equal to  $\angle D$ , what is the perimeter of  $\triangle DEF$ ?



- a. 12  
 b. 21  
 c. 22.5  
 d. 24.75

## Answers

- 16.** b. Angles 1 and 4 are the only ones not adjacent to each other.
- 17.** a. The number 2.25 involves a whole number, which is the 2 to the left of the decimal. This means that the answer will be a mixed number—a whole number plus a fraction. Convert the 0.25 into a fraction;  $\frac{25 \div 25}{100 \div 25} = \frac{1}{4}$ , adding the whole number, 2, to this fraction gives the answer  $2\frac{1}{4}$ .
- 18.** d.  $6^3$  is equal to  $(6)(6)(6) = 216$ .
- 19.** a. The correct order of operations for this calculation is  $10 + [(40 \div 10) \times 2]$ .
- 20.** b. In the decimal 0.125, the 125 is three places to the right of the decimal point; 125 is the greatest common factor of 125 and 1,000. The fraction is  $\frac{125 \div 125}{1,000 \div 125} = \frac{1}{8}$ .
- 21.** d. The perimeter is the total length of all sides. In a square, all four sides are of equal length, so the perimeter is  $(4)(4) = 16$ .
- 22.** c. Divide 33 by 0.12 (12%) to get 275.
- 23.** c. If the circumference ( $C = 2\pi r$ ) is  $12\pi$ , then the radius must be 6. Find the area by using the formula  $A = \pi r^2$ :  $A = \pi 6^2 = 36\pi$ .
- 24.** d.  $17^2$  is equivalent to 17 times 17, which is 289.
- 25.** c.  $\overline{DE}$  is 2.5 times greater than  $\overline{AB}$ ; therefore,  $\overline{EF}$  is 7.5 and  $\overline{DF}$  is 10. Add the three sides together to arrive at the perimeter.