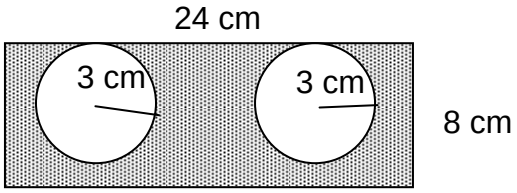
Franklin Math Bowl
Eighth Grade Exam 2005



1. The area of the shaded part of the figure above is
(a) 192 cm^2 (b) 174 cm^2 (c) (192 – 18π) cm^2 (d) (192 – 6π) cm^2

2. Which of these fractions are in order from least to greatest?
(a) $\frac{3}{5},\frac{3}{4},\frac{2}{3}$ (b) $\frac{5}{8},\frac{3}{5},\frac{4}{7}$ (c) $\frac{7}{12},\frac{1}{2},\frac{5}{8}$ (d) $\frac{4}{5},\frac{13}{15},\frac{7}{8}$

3. $(7 \times 10^5) + (3 \times 10^6) + (8 \times 10^4) = ?$
(a) 738,000 (b) 873,000 (c) 3,780,000 (d) 0.000873

4. $\dfrac{\frac{1}{4}+\frac{1}{2}+\frac{1}{6}}{\frac{1}{3}+\frac{1}{6}+\frac{1}{12}} = ?$ (a) $\frac{4}{7}$ (b) $\frac{3}{8}$ (c) $\frac{11}{7}$ (d) $\frac{7}{8}$

5. A farm yard contains 59 bopper birds. Seventeen have blue wings but not purple beaks. Thirty-four have purple beaks but not blue wings. How many have both blue wings and purple beaks?
(a) 25 (b) 8 (c) 42 (d) 51

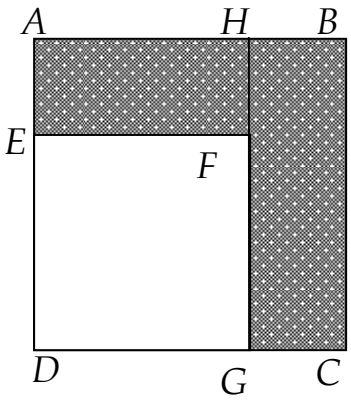
6. A student scores 83, 56, 74, and 90 on the first four tests. What does the student need to make on the fifth test to have an average of 77?
(a) 56.5 (b) 77 (c) 82 (d) 76

7. In a *magic square*, the sum of each row, diagonal, and column is the same. In this magic square, what are the missing numbers?

◘	9	17
11	¶	21
15	23	10

(a) ◘ = 22, ¶ = 16 (b) ◘ = 26, ¶ = 12 (c) ◘ = 20, ¶ = 18 (d) ◘ = 16, ¶ = 22

8. In the diagram, *ABCD* is a square and *DEFG* (the part that isn't shaded) is a rectangle. The area of the shaded portion is 56 square meters. The length of *AH* is 6 meters, and *GC* is 4 meters long. What is the area of *DEFG*?



(a) 40 sq. meters (b) 44 sq. meters
(c) 18 sq. meters (d) 36 sq. meters

9. 72,300,000,000 × 16,000,000 would end in how many zeroes?
(a) 48 (b) 13 (c) 14 (d) 15

10. A bus holds 40 passengers. There are 113 people going on a field trip. How many buses would you need to use?
(a) 2 (b) 3 (c) 4 (d) impossible to tell

11. You toss a fair coin twice. What is the probability that it lands on tails both times?
(a) ½ (b) 1/3 (c) ¼ (d) 0

12. A big circular pizza has a diameter of 20 inches. What is the area of the pizza, rounded to the nearest whole number?
(a) 1227 sq. in. (b) 63 sq. in. (c) 99 sq. in. (d) 314 sq. in.

13. If $\frac{3}{5}x+\frac{3}{4}=\frac{9}{8}$, then x =
(a) $\frac{25}{8}$ (b) $\frac{-9}{40}$ (c) $\frac{5}{2}$ (d) $\frac{5}{8}$

14. If you could jog at a rate of 4 feet per second, and could keep that pace up for a whole hour, how far would you travel in one hour?
(a) 14,400 feet (b) 900 feet (c) 240 feet (d) 144,000 feet

15. A triangle is 8 feet long at the base and is 6 feet tall. You decide to make another triangle that is 50% longer and 50% taller. What is the area of the new triangle?
(a) 27 square feet (b) 36 square feet (c) 54 square feet (d) 48 square feet

16. Jemieka's old job paid her $36,000 per year. Her new job pays $50,400. What percent increase in salary did she receive by changing jobs? (Round to the nearest whole percent, if necessary.)
(a) 140% (b) 71% (c) 29% (d) 40%

17. Austin's next-door neighbors have three dogs who bark on a regular schedule around the clock. Fido barks every 20 minutes. Happy barks every 35 minutes. Benji barks every 45 minutes. Austin hears all three of them bark together at noon on Monday. When is the next time he hears all three dogs bark?

(a) 5:15 PM Monday (b) 6:00 PM Monday
(c) 9:00 AM Tuesday (d) 7:00 PM Monday

18. If these numbers were written in order from least to greatest, which would come *second*?

(a) $\frac{2}{3}$ (b) $\frac{3}{5}$ (c) $\frac{11}{17}$ (d) $\frac{5}{8}$

19. Which of these is *not* the sum of two prime numbers, both less than 30, whose difference is 6?

(a) 20 (b) 28 (c) 32 (d) 50

20. $\frac{8\times10^{6}}{4\times10^{13}}$ = (a) 2×10^{-7} (b) 2×10^{7} (c) 0.5×10^{19} (d) 32×10^{13}

21. If $5(x + 2) + 4x = 10x + 3$, then x =

(a) -1 (b) $\frac{7}{9}$ (c) $\frac{13}{17}$ (d) 7

22. This number triangle fits a pattern. What is the sum of the numbers in the row that starts 1, 6, 15, … ?

(a) 32 (b) 64 (c) 42 (d) 48

1
1 1
1 2 1
1 3 3 1

23. On a map of Tennessee, $1\frac{1}{16}$ inches represent 20 miles. If Humboldt and Lexington are $1\frac{5}{8}$ inches apart on the map, how far apart are they in reality? Round to the nearest tenth of a mile.

(a) 11.6 mi (b) 13.1 mi (c) 24.6 mi (d) 30.6 mi

24. The first five triangular numbers are 1, 3, 6, 10, and 15. What is the eleventh?

(a) 48 (b) 55 (c) 66 (d) 78

25. The formula $C = \frac{M - 17}{3.5}$ is used to convert a human's age in years (M) into a cat's age (C). If a cat is 6 years old, what is the equivalent age for a human?

(a) 3 (b) 81 (c) 38 (d) 4

Answers
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1. C
2. D
3. C
4. C
5. B
6. C
7. A
8. B
9. C
10. B
11. C
12. D
13. D
14. A
15. A
16. D
17. C
18. D
19. D
20. D
21. D
22. B
23. D
24. C
25. C