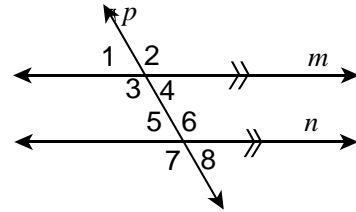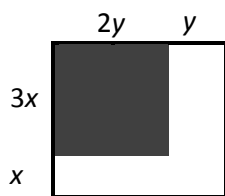# Franklin Math Bowl
Eighth Grade Test 2010

1. Evaluate $x^2 + 5y$ when $x = -3$ and $y = 10$.
   (A) 41   (B) 59   (C) 44   (D) 24

2. Add: $\frac{5}{8} + \frac{6}{13}$. Then change to a decimal. The digit in the hundred thousandths place is
   (A) 3   (B) 8   (C) 6   (D) 5

3. Simplify $13\frac{1}{7} - 5\frac{3}{5}$. Then convert it to a decimal rounded to the nearest hundredth.
   (A) 7.97   (B) 7.54   (C) 8.00   (D) 8.46

4. Evaluate $\frac{x^2 - 4}{y + 3}$ when $x = -8$ and $y = 7$.
   (A) $\frac{6}{5}$ (B) 4   (C) 6   (D) $-\frac{34}{5}$

5. In the figure at right, lines m and n are parallel. If angle 1 measures 54°, what is the measure of angle 8?
   (A) 126°   (B) 54°   (C) 36°
   (D) not enough information

6. Also in the figure at right, angles 3 and 4 are ____ angles.
   (A) complementary   (B) vertical
   (C) supplementary   (D) alternate interior

7. If $f(x) = 3(x + 8)$ and $g(x) = 4(x - 4)$, solve $f(x) = g(x)$.
   (A) 8   (B) -8   (C) 40   (D) -40

8. Simplify: $\frac{x^8 x^7}{x^3}$
   (A) x^{12} (B) x^5 (C) x^{53} (D) x^{54}

9. Simplify and write in correct scientific notation: $(8.5 \times 10^{41})(3.6 \times 10^8)$
   (A) 30.6×10^{328} (B) 12.1×10^{49} (C) 30.6×10^{49} (D) 3.06×10^{50}

10. A car travels at an average rate of 55 mph. How far would we expect it to travel in $2\frac{1}{5}$ hours?
    (A) 121 mi   (B) 25 mi   (C) 110 mi   (D) 137.5 mi

11. Find the absolute value of the difference between $\frac{13}{17}$ and its reciprocal.
    (A) $\frac{120}{221}$ (B) 4   (C) $\frac{26}{17}$ (D) $\frac{27}{50}$

12. Find the median of 62%, $\frac{5}{8}$, $\frac{5}{13}$, $\frac{\pi}{4}$, −33%, 0.57, and $\frac{\sqrt{3}}{2}$.

(A) $\frac{\pi}{4}$ (B) 62%   (C) $\frac{5}{13}$ (D) .6225

13. In Sheena's social studies class, the grade is based on the average of five test grades, which all count the same. On the first four tests, she made grades of 64, 77, 41, and 80. What is the minimum grade she needs to make on the fifth test to have an average of at least 70?

(A) 79   (B) 59   (C) 75   (D) 88

14. If the fifth test in Sheena's social studies class (see #13) counts twice, what does she need to make on it to have at least a 70 average?

(A) 79   (B) 59   (C) 75   (D) 88

15. A nickel is worth $0.05 and is 0.075 inches thick. Josh is 5 ft 3 in. tall. How much would a stack of nickels as tall as Josh be worth?

(A) $42   (B) $35.33   (C) $0.24   (D) $94.50

16. What fraction of this rectangle is shaded?

(A) $\frac{1}{2}$ (B) $\frac{5}{12}$ (C) $\frac{2}{3}$ (D) $\frac{3}{4}$

17. The U.S. Census Bureau compiled these figures in 2008 about adults age 25 and over and how much education they had.
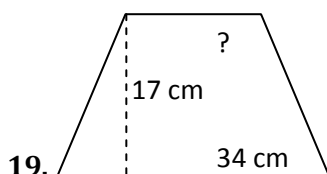
Education	Number (in thousands)
Didn't Finish High School	26,305
High School Graduate	61,247
Some College	33,764
Associate's Degree	17,275
Bachelor's Degree	37,494
Advanced Degree(s)	20,219

What percentage of the population had an associate's degree or bachelor's degree, to the nearest whole percent?

(A) 28%   (B) 38%   (C) 48%   (D) 26%

18. The sum of two numbers is 97. The difference of the two numbers is 65. What is the smaller of the two numbers?

(A) 16   (B) 18   (C) 32   (D) 28

19.

The area of this trapezoid is 527 cm². What is the length of the top side?

(A) 12.8 cm   (B) 28 cm   (C) 51 cm   (D) 578 cm

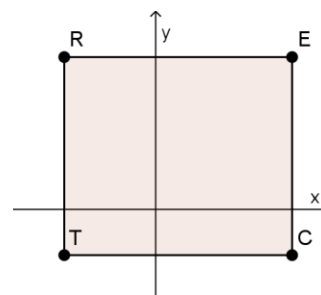**20.** Which of these would have an odd quotient when divided by 2?

(A) 273,495,834,127,518   (B) 523,532,856,345,234,563,724
(C) 634,534,834,928,172   (D) 384,483,783,485 ,928,174,567,364

21. In a certain month, three Sundays have dates that are even numbers. What day of the week is the 12th of that month?

(A) Sunday   (B) Monday   (C) Tuesday   (D) Wednesday

22. Rectangle *RECT* (see right) is defined by the point $R(-6,10)$, $E(x, 10)$, $C(x,-3)$, and $T(-6,-3)$. The area of *RECT* is 195 square units. What is the value of x?

(A) 15   (B) 5   (C) 7   (D) 9

23. The sum of two numbers is 14. The product of those numbers is 45. Find the sum of their reciprocals.

(A) $\frac{1}{45}$ (B) $\frac{45}{14}$ (C) $\frac{14}{45}$ (D) $\frac{1}{7}$

24. Taylor can mow $\frac{3}{7}$ of her yard in 36 minutes. If she starts mowing at 10:53 a.m. and mows at the same rate the whole time, what time does she finish the job?

(A) 11:57 a.m.   (B) 12:25 p.m.   (C) 12:05 p.m.   (D) 12:17 p.m.

The last question may be used as a tie breaker. Show your work on the Scan-Tron sheet in the area provided.

25. Serena drives 18 mi due south, 8 mi due west, 6 mi due north, and 3 mi due east. How far is she from her starting point when she finishes?

(A) 35 mi   (B) 17 mi   (C) 13 mi   (D) 20 mi