MATH 1030: Diagnostic Test Solutions

1. 4
2. 30
3. $\frac{3}{5}$, 0.6, 60%
4. (a) $-\frac{112}{5} = -22.4$ (b) -2 (c) -106
5. (a) 75 (b) 6467.63 (c) 13.0976
6. (a) x^{10} (b) $x^{-4}y^6$ (c) $x^{10}y^4$
7. The U.S. dollar is smaller.
8. $y = 6x$ and $y - x = 102$ implies $x = 20.4$ and $y = 122.4$
9. 8.15 hours, 13.85 miles per hour.
10. $l = w + 14$ and $l \cdot w = 72$ implies $l = 18$ and $w = 4$.
11. $\frac{2}{3}$ of $\frac{3}{4}$ is $\frac{2}{3} \cdot \frac{3}{4} = \frac{1}{2} = 50\%$.
12. (a) $x = \frac{-7}{2}$ (b) $x = \pm 6$ (c) $x = 4, -3$ (d) $x = -2$ (e) $x = 7, -13$
13. $x = \frac{19}{5}$ and $y = \frac{16}{5}$
14. The y-intercept is -3.
15. We have the following table:

Cars	Tricycles	Bicycles
4	0	2
3	2	0
3	0	3
2	2	2
2	0	5
1	4	1
1	2	4
1	0	7
0	6	0
0	4	3
0	2	6
0	0	9

16. The perimeter is $120 + 12\pi = 157.7$ and the area is $1152 + 72\pi = 1378.2$
17. 28% are graduate students.
18. \$2255.98
19. Your net salary will be less than it was two years ago.

20. (a) There are two errors. First, when you cancel the three, you must cancel it from each term in the numerator, so the second line should read $-5 + x = 1$. Second, in the last step, you must divide by three on both sides, you cannot subtract 3. (b) The first, third, and fifth steps are incorrect. (c) The five does not get distributed among the terms in the parentheses. The distributive law is for addition (i.e., $a(b + c) = ab + ac$).

21. The slope is $m = \frac{2}{7}$, the y-intercept is $\frac{15}{7}$, and the x-intercept is $-\frac{15}{2}$.

22. (a) $x = 3$ (b) $x = \sqrt[5]{23/2} = 1.6298$ (c) $x = \frac{852}{5} = 170.4$ (d) $x = \frac{62748521}{5} = 1.254 \times 10^7$

23. (a) $y = 2.5$ (b) $a = .101961$

24. The expression equals -1.05813.