PURDUE UNIVERSITY
STUDY GUIDE FOR INTERMEDIATE ALGEBRA, MA 111
For Students Who Plan to Obtain Credit In MA 111 By Examination.

This study guide describes briefly the topics one should master before one attempts to take the examination in Intermediate Algebra. This material can be found in many currently available textbooks, many of which are entitled Intermediate Algebra. The outline that follows is based on the text by Bittinger and Ellenbogen, *Intermediate Algebra: concepts and applications,* 7^{th} edition.

IMPORTANT:

1. If you plan to establish credit by examination, read this material thoroughly.
2. Study all of the material listed in the outline.
3. Work many practice problems.
4. When you feel you are prepared for it, take the sample examination.
5. When you believe your preparation is complete, go to your academic advisor, obtain a credit exam request form, and follow the instructions given therein.

Textbook: *Intermediate Algebra: concepts and applications,* 7^{th} edition

Authors: Bittinger and Ellenbogen

Publisher: Pearson/ Addison Wesley

Chapter 1:	Sectioms 1-7
Chapter 2:	Sectioms 1-6
Chapter 3:	Sectioms 1-3
Chapter 4:	Sectioms 1, 3
Chapter 5:	Sectioms 1-5; 7,8
Chapter 6:	Sectioms 1, 2, 4, 5, 8
Chapter 7:	Sectioms 1-6
Chapter 8:	Sectioms 1, 2

MA 111 PRACTICE QUESTIONS FOR THE FINAL 4/02

1. Evaluate $n^2p - 2np$ for $n = 3$ and $p = 4$.
   A. 132 B. 12 C. 30 D. 60 E. None of these.

2. $(\frac{2}{5} + \frac{1}{4}) \div \frac{1}{5} =$
   A. $\frac{5}{3}$ B. $\frac{3}{4}$ C. $\frac{1}{15}$ D. $\frac{13}{4}$ E. $\frac{13}{100}$

3. $-\frac{3}{4} - \frac{2}{5} =$
   A. $\frac{23}{20}$ B. $-\frac{5}{9}$ C. $-\frac{7}{20}$ D. $\frac{1}{9}$ E. None of these.

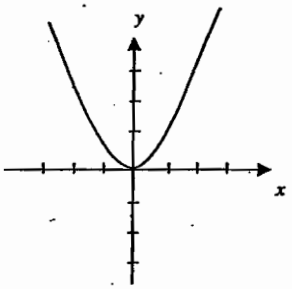
4. Simplify by combining like terms: $5x - [4 - 3(2x - 8)]$.
   A. $11x - 28$ B. $-x - 12$ C. $-x + 19$ D. $11x + 21$ E. None of these.

5. Simplify, giving your answer in scientific notation: $(3.0\text{x}10^{-4})(7.2\text{x}10^{9})$.
   A. $2.16\text{x}10^{5}$ B. $21.6\text{x}10^{-5}$ C. $2.16\text{x}10^{-36}$ D. $2.16\text{x}10^{6}$ E. None of these.

6. $(\frac{1}{2}x - 5)^2 =$
   A. $\frac{1}{4}x^2 + 5x - 25$ B. $\frac{1}{4}x^2 - 5x + 25$ C. $\frac{1}{4}x^2 - \frac{5}{2}x - 25$ D. $\frac{1}{4}x^2 - \frac{5}{2}x + 25$
   E. None of these.

7. The slope of a line passing through the two points $(1, 3)$ and $(3, -2)$ is
   A. $\frac{1}{4}$ B. $\frac{1}{2}$ C. $-\frac{2}{5}$ D. -2 E. None of these.

8. Find the correct equation for the following graph.



   A. $y = 2x^2 - 1$ B. $y = x$ C. $y = x^2 - 1$ D. $y = x^2$ E. None of these.

9. If $f(x) = \dfrac{2x + 1}{3x - 4}$, find $f(x + 1)$.
   A. $\dfrac{2x + 3}{3x - 1}$ B. $\dfrac{2x + 2}{3x - 3}$ C. $\dfrac{2x + 1}{3x + 1}$ D. $\dfrac{2x^2 + 1}{3x^2 + 1}$ E. None of these.

10. Find the equation of the line, in standard form, having x-intercept 3 and y-intercept -2.
    A. $2x + 3y = 6$ B. $3x - 2y = 5$ C. $2x - 3y = 6$ D. $2x + 3y = 3$ E. None of these.

11. Find a function for the line containing the points $(4, -1)$ and $(2, -2)$.
    A. $f(x) = x - 3$ B. $f(x) = \frac{1}{2}x + 3$ C. $f(x) = 2x - 3$ D. $f(x) = \frac{1}{2}x$ E. None of these.

12. If $F(x) = 3 - x$ and $G(x) = 2 + x^2$, find $(F \cdot G)(-2)$.
A. 6 B. 30 C. -30 D. -6 E. None of these.

13. Solve the inequality $3x - 7 > 5x + 6$.
A. $x < -\frac{13}{2}$ B. $x > -\frac{13}{2}$ C. $x < -\frac{1}{2}$ D. $x > -\frac{1}{2}$ E. None of these.

14. Avis charges \$25 per day plus 30 cents per mile to rent a car. National only charges 40 cents per mile. If Joe rents a car for one day, for what number of miles, x, will National be the least expensive?
A. $x < 25$ B. $x > 25$ C. $x < 250$ D. $x < \frac{55}{40}$ E. None of these.

15. Solve: $|2x + 1| = 5$.
A. $x = -2, x = 2$ B. $x = -2, x = 3$ C. $x = 2$ D. $x = -3, x = 2$ E. None of these.

16. Solve: $|3x - 7| \geq 5$.
A. $[\frac{2}{3}, \infty)$ B. $(-\infty, \frac{2}{3}] \bigcup [4, \infty)$ C. $(-\infty, -4] \bigcup [\frac{2}{3}, \infty)$ D. $(-\infty, -4] \bigcup [4, \infty)$
E. None of these.

17. If y varies inversely as x and $y = 18$ when $x = 6$, find x when $y = 2$.
A. 54 B. $\frac{1}{54}$ C. $\frac{2}{3}$ D. $\frac{3}{2}$ E. None of these

18. Simplify $\left(\frac{a^2 b^{-3}}{a^{-3} b^2}\right)^{-2}$.
A. $\frac{b}{a}$ B. $(\frac{a}{b})^2$ C. $(\frac{a}{b})^6$ D. $(\frac{b}{a})^{10}$ E. None of these

19. Factor completely: $-8y^3 + 20y^2 + 12y$.
A. $-4y(2y-3)(y+1)$ B. $-4y(2y+1)(y-3)$ C. $-4y(2y-1)(y+3)$ D. $-4y(2y+3)(y+1)$
E. None of these.

20. Factor completely: $90ax^2 - 10ay^2$.
A. $10a(9x^2 - y^2)$ B. $10(ax + y)(ax - y)$ C. $10(9x + y)(9x - y)$ D. $10a(x - y)^2$
E. None of these.

21. Divide and simplify $\dfrac{x^2 - 2x + 1}{x^2 - 1} \div \dfrac{x^2 - 3x + 2}{x - 2}$.
A. $\dfrac{(x-1)^2}{x+1}$ B. $\dfrac{1}{x+1}$ C. $\dfrac{x-2}{(x+1)(x+2)}$ D. 1 E. None of these

22. Add and simplify $\dfrac{3ab}{a^2 - b^2} + \dfrac{a - b}{a + b}$.
A. $\dfrac{a^2 + ab + b^2}{a^2 - b^2}$ B. $\dfrac{a^2 + 3ab - b^2}{a^2 - b^2}$ C. $\dfrac{a + 3ab - b}{a^2 - b^2}$ D. $\dfrac{a^2 - ab - b^2}{a^2 - b^2}$ E. None of these.

23. Combine terms and simplify: $12\sqrt{45} - 8\sqrt{80}$.
A. $-20\sqrt{5}$ B. $-4\sqrt{35}$ C. $4\sqrt{5}$ D. $8\sqrt{5}$ E. None of these.

24. Simplify: $\sqrt{(x - 16)^{12}}$.
A. $(x - 16)^{2\sqrt{3}}$ B. $x - \frac{3}{4}$ C. $(x - 16)^6$ D. $(x + 16)^6$ E. None of these.

25. Multiply and simplify, writing your answer in radical notation: $\sqrt{10}\sqrt{6}$.
A. $\sqrt{16}$ B. $6\sqrt{10}$ C. $10\sqrt{6}$ D. $2\sqrt{15}$ E. None of these.

26. Solve for x: $\sqrt{3x+7} = 8$.
A. $x = \frac{1}{3}$ B. $x = 5$ C. $x = \sqrt{3}$ D. $x = 57$ E. None of these.

27. Solve $A = \frac{1}{2}h(a+b)$ for h.
A. $h = \dfrac{a+b}{2A}$ B. $h = \dfrac{A}{2(a+b)}$ C. $h = \dfrac{2A}{a+b}$ D. $h = \dfrac{2(a+b)}{A}$ E. None of these.

28. Solve the system of equations for x : $3x + y = -1,\ x + 2y = 3$.
A. $x = -2$ B. $x = 2$ C. $x = 1$ D. $x = -1$ E. None of these.

29. Solve for x : $6x^2 = 42$.
A. $x = 7$ B. $x = \pm\sqrt{7}$ C. $x = -7$ D. $x = 14$ E. None of these.

30. Solve for x : $2x^2 - 3x = 2$.
A. $-\frac{1}{2},\ -2$ B. $-\frac{3}{2},\ 2$ C. $\frac{3}{2},\ 2$ D. $\frac{1}{2},\ -2$ E. None of these.

31. Solve for x : $\dfrac{1}{x-4} - \dfrac{1}{x-2} = \dfrac{1}{4}$.
A. $x = 4,\ x = 2$ B. $x = 0,\ x = 2$ C. $x = 0,\ x = 6$ D. $x = 6,\ x = 4$ E. None of these.

32. Rationalize the denominator: $\dfrac{\sqrt{10}}{\sqrt{3x}}$.
A. 10 B. $\dfrac{\sqrt{30x}}{9x^2}$ C. $\dfrac{\sqrt{30x}}{3x}$ D. $\dfrac{10}{3x}$ E. $\dfrac{\sqrt{10+3x}}{9x^2}$

33. One solution of $2x^2 + 2x - 1 = 0$ is:
A. $-1 - \sqrt{3}$ B. $-2 - \frac{1}{2}\sqrt{3}$ C. $-2 - \sqrt{3}$ D. $\frac{1}{2} - \frac{1}{2}\sqrt{3}$ E. $-\frac{1}{2} - \frac{1}{2}\sqrt{3}$

34. $(\frac{1}{8})^{-2/3} =$
A. $\frac{1}{4}$ B. 4 C. $16\sqrt{2}$ D. $\dfrac{1}{16\sqrt{2}}$ E. None of these.

35. The sum of two positive numbers is $\frac{3}{2}$ and their difference is $\frac{1}{2}$. Find the smaller of the two numbers.
A. $\frac{1}{2}$ B. $\frac{3}{2}$ C. 1 D. $\frac{1}{4}$ E. None of these.

36. Paul can paint a room in 5 hours. Sally can paint the same room in 3 hours. How long will it take for them to paint the room if they work together?
A. 4 hours B. $1\frac{7}{8}$ hours C. 3 hours D. $\frac{8}{15}$ hours E. None of these.

37. At 2:00 P.M. two cars start toward each other from towns 240 miles apart. If the rate of one car is 10 mph faster than the other, find the rate of the faster car if the two cars meet at 5:00 P.M.
A. 45 mph B. 35 mph C. 40 mph D. 30 mph E. None of these.

38. Two investments are made totaling \$4800. Part of the money is invested at 8% and the rest at 9%. In the first year, they yield \$412 in simple interest. How much money is invested at 8%?
A. \$1820 B. \$2980 C. \$2600 D. \$2000 E. None of these.

SOLUTIONS

1. B 2. D 3. E $(-\frac{23}{20})$ 4. A 5. D 6. B 7. E $(-\frac{5}{2})$ 8. D 9. A 10. C
11. E $(y = \frac{1}{2}x - 3)$ 12. B; 13. A 14. C 15. D 16. B 17. A 18. D 19. B
20. E $[10a(3x + y)(3x - y)]$ 21. B 22. A 23. C 24. C 25. D 26. E $(x = 19)$
27. C 28. D 29. B 30. E $(x = -\frac{1}{2}, x = 2)$ 31. C 32. C 33. E 34. B 35. A
36. B 37. A 39. D;