Community College of Philadelphia
Practice for the Mathematics Placement Exam

1. Reduce $\dfrac{42}{48}$.

    (a) $\dfrac{7}{8}$

    (b) $\dfrac{1}{4}$

    (c) $\dfrac{11}{14}$

    (d) $\dfrac{8}{7}$

2. Add $\dfrac{5}{6} + \dfrac{1}{7}$.

    (a) $\dfrac{6}{13}$

    (b) $\dfrac{41}{42}$

    (c) $\dfrac{6}{42}$

    (d) $\dfrac{6}{35}$

3. Multiply $\dfrac{4}{21} \times \dfrac{7}{12}$.

    (a) $\dfrac{11}{33}$

    (b) $\dfrac{1}{9}$

    (c) $\dfrac{28}{84}$

    (d) $\dfrac{48}{84}$

4. Write 0.15 as a reduced fraction.

    (a) $\dfrac{3}{20}$

    (b) $1\dfrac{1}{2}$

    (c) $\dfrac{1}{5}$

    (d) $\dfrac{15}{1000}$

5. Add: $2 + 0.3 + 0.17$.

    (a) 0.022

    (b) 2.20

    (c) 2.47

    (d) 2.37

6. Find 7% of 40.

    (a) 2.8

    (b) 28

    (c) 0.028

    (d) 280

7. Find x if $\dfrac{x}{20} = \dfrac{3}{5}$.

    (a) 55

    (b) 12

    (c) 33.3

    (d) 10

8. Find $(-10) + (+12) + (-18)$.

    (a) 16

    (b) -16

    (c) -40

    (d) 40

9. Find $(-12) - (-5)$.

    (a) -7

    (b) -17

    (c) 7

    (d) 17

10. Subtract: $(2a - 3b + 4c) - (-a + 3b + 4c)$.

    (a) $a + 8c$

    (b) $3a + 8c$

    (c) $288a^2b^2c^2$

    (d) $3a - 6b$

11. Solve for x: $-3x - 5 = 13$.

    (a) $x = 6$

    (b) $x = 2$

    (c) $x = -\dfrac{13}{8}$

    (d) $x = -6$

12. Multiply: $(2x - 3)(3x + 2)$.

    (a) $6x^2 - 5x - 6$

    (b) $x - 6$

    (c) $6x^2 - 13x - 6$

    (d) $6x^2 - 6$

13. Factor: $81 - a^2$.

    (a) $(a - 9)(a + 9)$

    (b) $(9a - 1)(9a + 1)$

    (c) $9(9 - a)$

    (d) $(9 - a)(9 + a)$

14. Simplify: $\dfrac{2^7 \cdot 3^5}{2^4 \cdot 3^3}$.

    (a) 6

    (b) 7776

    (c) $\dfrac{35}{12}$

    (d) 72

15. Use the quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad \text{if} \quad ax^2 + bx + c = 0$$

    in order to solve $2x^2 + 5x - 12 = 0$.

    (a) $x = -4$ or $x = \dfrac{3}{2}$

    (b) $x = 4$ or $x = \dfrac{3}{2}$

    (c) $x = -4$ or $x = -\dfrac{3}{2}$

    (d) $x = 4$ or $x = -\dfrac{3}{2}$

16. If $x^2 - 5x - 14 > 0$, then x satisfies the inequality

    (a) $x < -2$ or $x > 7$

    (b) $-7 < x < 2$

    (c) $x < -7$ or $x > 2$

    (d) $-2 < x < 7$

17. Find the distance between the points $(-1, 3)$ and $(2, -4)$.

    (a) $\sqrt{58}$

    (b) $\sqrt{-58}$

    (c) $\sqrt{52}$

    (d) $\sqrt{2}$

18. Let $f(x) = x^2 - x$ and $g(x) = 2x + 1$. Find $g(f(-2))$.

    (a) 5

    (b) -6

    (c) 13

    (d) $2g$

19. Find the equation of the line passing through $(0, -1)$ and perpendicular to the line passing through the points $(1, 2)$ and $(5, 4)$.

    (a) $y = -2x - 2$

    (b) $y = \dfrac{x}{2} + \dfrac{1}{2}$

    (c) $y = -2x - 1$

    (d) $y = x - 1$

20. Find the equation of the line in figure 1

    (a) $y = -\dfrac{2}{3}x + 2$

    (b) $y = \dfrac{2}{3}x + 2$

    (c) $y = -\dfrac{2}{3}x + 3$

    (d) $y = \dfrac{2}{3}x + 3$

21. Find the equation of the parabola in figure 2.

    (a) $y = \dfrac{1}{2}(x - 2)^2 - 3$

    (b) $y = \dfrac{1}{2}(x - 2)^2 + 3$

    (c) $y = (x - 2)^2 - 3$

    (d) $y = \dfrac{1}{2}(x - 3)^2 + 2$

22. Find the equation of the circle in figure 3

    (a) $(x-1)^2 + (y+2)^2 = 9$

    (b) $(x+1)^2 + (y-2)^2 = 9$

    (c) $(x+1)^2 + (y-2)^2 = 3$

    (d) $(x-1)^2 + (y+2)^2 = 3$
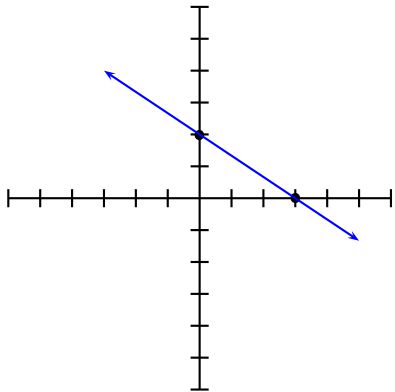
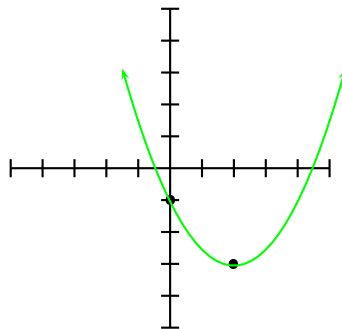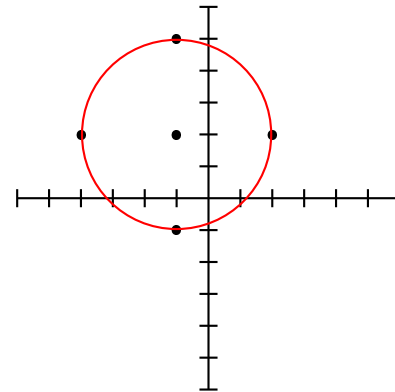|		
Figure 1: Problem 20.	Figure 2: Problem 21.	Figure 3: Problem 22.

23. If $3^x = 2$ then $x =$

    (a) $\log_2 3$

    (b) $\log_3 2$

    (c) $\ln 2$

    (d) $\log_{10} 6$

24. What is the smallest positive real number x such that $\sin(2x+1) = 1$?

    (a) $x = 0$

    (b) $x = \dfrac{\pi}{4}$

    (c) $x = \dfrac{\pi}{2}$

    (d) $x = \dfrac{\pi}{4} - \dfrac{1}{2}$

25. Find the exact value of $\log_{\sqrt{3}} 81$.

    (a) 4

    (b) 2

    (c) 16

    (d) 8

Further practice can be found under the placement link at http://faculty.ccp.edu/dept/math/.

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