EXAM 4X* PRE ALGEBRA Dr. Rapalje

SHOW ALL WORK on this test or on separate! Circle final answers. CALCULATORS—YES!!

In 1 - 4, draw each figure, and label the sides. Find the PERIMETER and the AREA of each figure. For circles, give the exact value using π, then use 3.14 to find the approximate value. BE SURE TO GIVE ALL UNITS!! (3 points each part!)

1. **A rectangle whose width is 12 cm and whose length is 20 cm.**

   P = _____

   A = _____

2. **A triangle whose base is 6 feet and whose height is 8 feet. The other two sides of the triangle are each 10 feet.**

   P = _____

   A = _____

3. **A circle whose radius is 3 meters.**

   P = _____

   A = _____

4. **A circle whose diameter is 14 inches.**

   P = _____

   A = _____

In 6 – 7, find the exact values with π, and also the approximate values by rounding to nearest hundredth.

5. **Find the volume of a box that is 12 feet long, 4 feet wide, and 6 feet high. (Give units!!)**

6. **Find the volume of a cylindrical can whose base has a radius of 2 inches, and whose height is 5 inches. Give units.**

7. **Find the volume of a cylinder with diameter 5 feet and height 10 feet. Be sure to give units.**

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In 8 – 22, simplify completely.

8. $x \bullet x^5$ **9.** $x^3 \bullet x^5$ **10.** $(x^3)^5$ **11.** $(-2x^2)^3$

12. $(3x^4y^7)^2$ **13.** $(y^2)^3(y^3)^4$ **14.** $(2xy^3) \bullet (3xy^2)$ **15.** $(2xy)^3 \bullet (3xy)^2$

16. $-3(x^2 - 5x - 8)$ **17.** $(x - 5)^2$ **18.** $(x + 4)(x + 6)$ **19.** $(x + 4)(x - 6)$

20. $(3x + 4)(2x - 6)$ **21.** $-4x(x^2 - 6x + 8)$ **22.** $(x - 2)(x^2 + 6x - 8)$

In 23 – 30, factor completely.

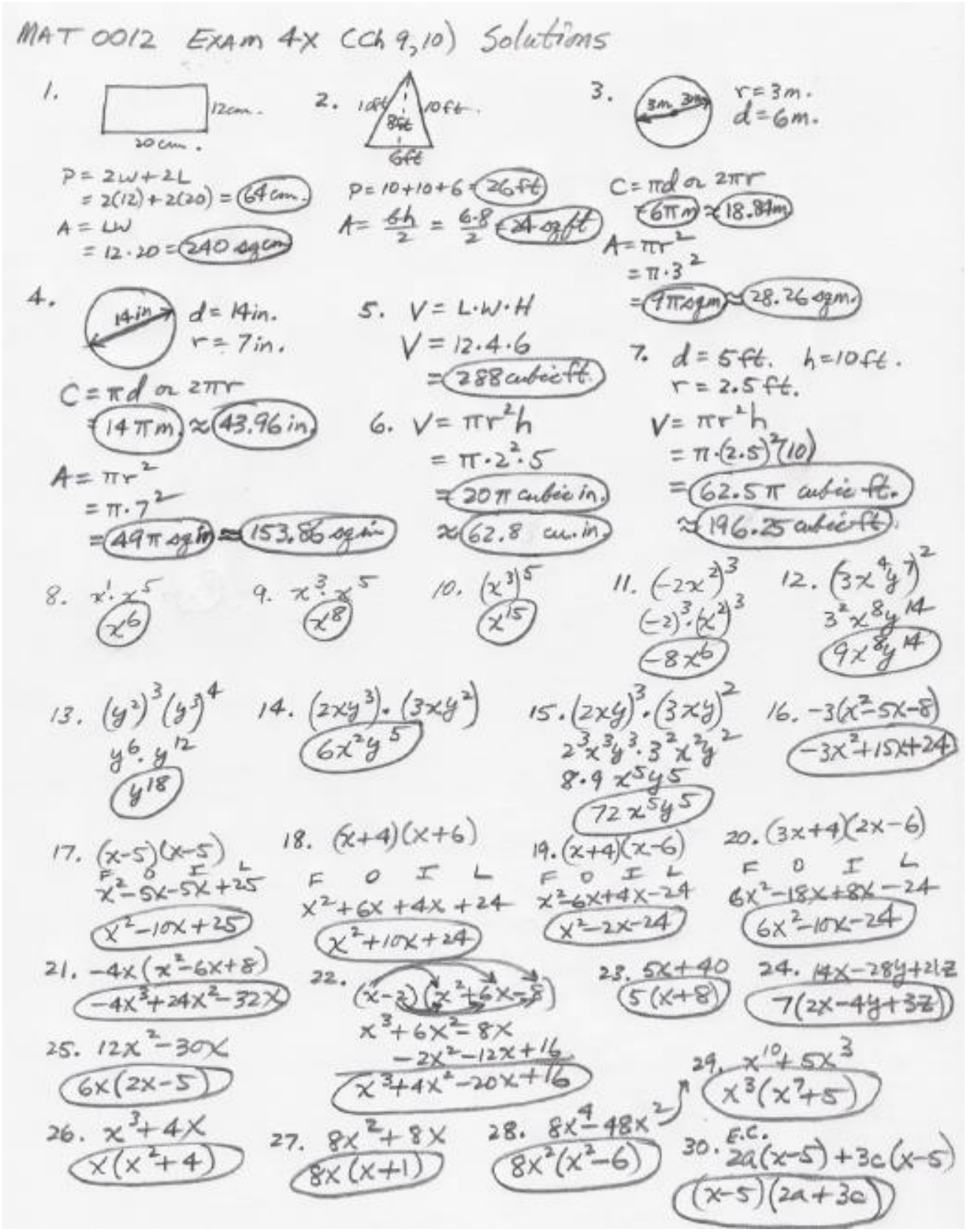
23. $5x + 40$ **24.** $14x - 28y + 21z$ **25.** $12x^2 - 30x$

26. $x^3 + 4x$ **27.** $8x^2 + 8x$ **28.** $8x^4 - 48x^2$

29. $x^{10} + 5x^3$ **30.** $2a(x - 5) + 3c(x - 5)$

BONUS POINTS:

1. **Hand-in Assignment: Practice Test**
2. **How many hours of tutoring from an SCC Academic Success Center?**
3. **Extra Credit Problem: Factor completely:** $16x^3y^4 - 32x^2y^8$



MAT 0012 EXAM 4X (Ch 9,10) Solutions

1. 12cm, 20cm.
$P = 2W+2L = 2(12)+2(20) = 64$ cm.
$A = LW = 12\cdot 20 = 240$ sq cm

2. 10ft, 8ft, 6ft.
$P = 10+10+6 = 26$ ft
$A = \frac{bh}{2} = \frac{6\cdot 8}{2} = 24$ sq ft

3. 3m, r = 3m, d = 6m.
$C = \pi d$ or $2\pi r$
$= 6\pi$ m ≈ 18.84 m
$A = \pi r^2$
$= \pi \cdot 3^2$
$= 9\pi$ sq m ≈ 28.26 sq m

4. 14in, d = 14in, r = 7in.
$C = \pi d$ or $2\pi r$
$= 14\pi$ in ≈ 43.96 in
$A = \pi r^2$
$= \pi \cdot 7^2$
$= 49\pi$ sq in ≈ 153.86 sq in

5. $V = L\cdot W\cdot H$
$V = 12\cdot 4\cdot 6$
$= 288$ cubic ft.

6. $V = \pi r^2 h$
$= \pi \cdot 2^2 \cdot 5$
$= 20\pi$ cubic in.
≈ 62.8 cu. in.

7. d = 5ft. h = 10ft. r = 2.5 ft.
$V = \pi r^2 h$
$= \pi \cdot (2.5)^2 (10)$
$= 62.5\pi$ cubic ft.
≈ 196.25 cubic ft.

8. $x^1 \cdot x^5 = x^6$

9. $x^3 \cdot x^5 = x^8$

10. $(x^3)^5 = x^{15}$

11. $(-2x^2)^3$
$(-2)^3 \cdot (x^2)^3$
$-8x^6$

12. $(3x^4y^7)^2$
$3^2 x^8 y^{14}$
$9x^8y^{14}$

13. $(y^2)^3 (y^3)^4$
$y^6 \cdot y^{12}$
y^{18}

14. $(2xy^3)\cdot(3xy^2)$
$6x^2y^5$

15. $(2xy)^3 \cdot (3xy)^2$
$2^3x^3y^3 \cdot 3^2x^2y^2$
$8\cdot 9\, x^5y^5$
$72x^5y^5$

16. $-3(x^2-5x-8)$
$-3x^2+15x+24$

17. $(x-5)(x-5)$ F O I L
$x^2-5x-5x+25$
$x^2-10x+25$

18. $(x+4)(x+6)$ F O I L
$x^2+6x+4x+24$
$x^2+10x+24$

19. $(x+4)(x-6)$ F O I L
$x^2-6x+4x-24$
$x^2-2x-24$

20. $(3x+4)(2x-6)$ F O I L
$6x^2-18x+8x-24$
$6x^2-10x-24$

21. $-4x(x^2-6x+8)$
$-4x^3+24x^2-32x$

22. $(x-2)(x^2+6x-8)$
x^3+6x^2-8x
$-2x^2-12x+16$
$x^3+4x^2-20x+16$

23. $5x+40$
$5(x+8)$

24. $14x-28y+21z$
$7(2x-4y+3z)$

25. $12x^2-30x$
$6x(2x-5)$

26. x^3+4x
$x(x^2+4)$

27. $8x^2+8x$
$8x(x+1)$

28. $8x^4-48x^2$
$8x^2(x^2-6)$

29. $x^{10}+5x^3$
$x^3(x^7+5)$

30. E.C. $2a(x-5)+3c(x-5)$
$(x-5)(2a+3c)$