

Math 10C: Polynomials

PRACTICE EXAM

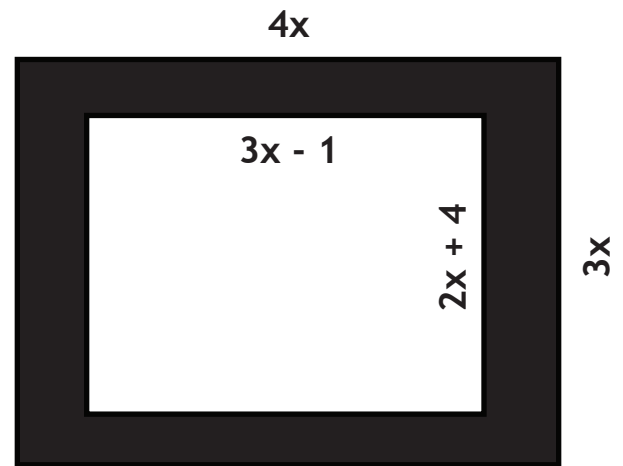
1. $(3x)^2(2x - 1)$ is equivalent to:
- A. $6x^3 - 3x^2$
 - B. $12x^3 - 6x^2$
 - C. $18x^3 - 9x^2$
 - D. $9x$
2. $(3x - 2)^2$ is equivalent to:
- A. $9x^2 - 4$
 - B. $9x^2 + 4$
 - C. $9x^2 - 12x + 4$
 - D. $9x^2 + 12x + 4$
3. $2(2x + 1)(4x - 5)$ is equivalent to:
- A. $16x^2 - 10$
 - B. $16x^2 - 12x - 10$
 - C. $32x^2 - 20$
 - D. $32x^2 - 24x - 20$
4. $(3x - 2)(1 - 2x)$ is equivalent to:
- A. $-7x$
 - B. $7x$
 - C. $-6x^2 + 7x - 2$
 - D. $6x^2 + 7x - 2$
5. $(4x - 3y)(2 + 3x - y)$ is equivalent to:
- A. $8x + 3y^2$
 - B. $8x - 9xy + 3y^2$
 - C. $12x^2 - 13xy + 3y^2 + 8x - 6y$
 - D. $16x^2 - 12xy + 4y^2 + 5x - 1y$

6. $3(x - 1)^2 - 2(2x - 3)^2$ is equivalent to:

- A. $-x^2 + 3$
- B. $3x^2 - 4x + 1$
- C. $-5x^2 + 18x - 15$
- D. $5x^2 - 18x + 15$

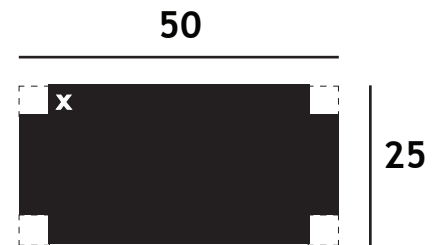
7. The shaded area can be expressed as:

- A. $12x^2$
- B. $6x^2 - 4$
- C. $6x^2 - 10x + 4$
- D. $3x^2 - 5x + 3$



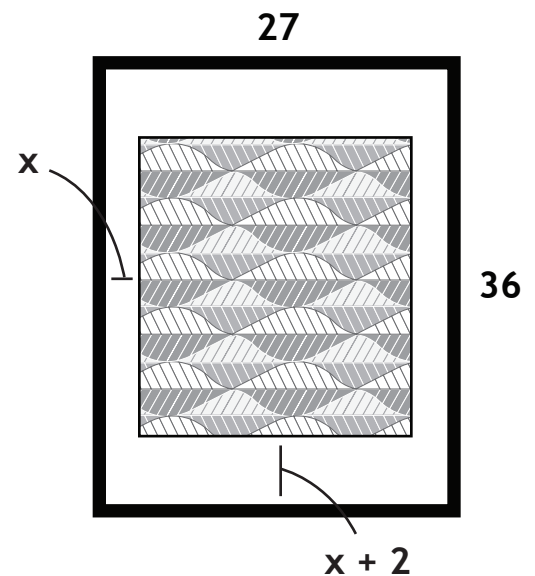
8. A piece of cardboard is made into an open box by cutting out squares from each corner. The length of the piece of cardboard is 50 cm and the width is 25 cm. Each square has a side length of x cm. The volume of the box is:

- A. $x^3 - x^2 + 50$
- B. $2x^3 + 50x^2 + 480x$
- C. $2x^3 - 75x^2 + 625x$
- D. $4x^3 - 150x^2 + 1250x$



9. A picture frame has a white mat surrounding the picture. The frame has a width of 27 cm and a length of 36 cm. The mat is 2 cm wider at the top and bottom than it is on the sides. The area of the mat is:

- A. $-4x^2 + 118x + 108$
- B. $4x^2 + 120x + 104$
- C. $-2x^2 + 59x + 54$
- D. $5x^2 + 80x + 92$



10. The greatest common factor of πr^2 and $\pi r s$ is:

- A. πr
- B. $\pi r s$
- C. πr^2
- D. $\pi r^2 s$

11. The factored form of $-4x^2 + 24x$ is:

- A. $-4x(x - 6)$
- B. $4x(x - 6)$
- C. $4x(x + 6)$
- D. $-2x(2x + 12)$

12. The factored form of $-xy^3 - x^2y^2$ is:

- A. $x^2y(y - x)$
- B. $-xy(y + x)$
- C. $-xy^2(y + x)$
- D. $-x^2y^2(y - 1)$

13. The factored form of $5ax - 15a - 3x + 9$ is:

- A. $(x - 3)(5a + 3)$
- B. $(x - 3)(5a - 3)$
- C. $(x + 3)(5a - 3)$
- D. $(x + 3)(5a + 3)$

14. A pencil can be thought of as a cylinder topped by a cone.
A factored expression for the external surface area is:

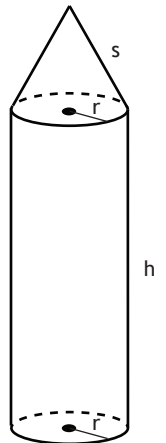
- A. $\pi r^2(2h - s)$
- B. $\pi r^2(r + h + s)$
- C. $\pi r(r + h)$
- D. $\pi r(r + 2h + s)$

From Formula Sheet:

$$SA_{\text{Cylinder}} = 2\pi r^2 + 2\pi r h$$

$$SA_{\text{Cone}} = \pi r^2 + \pi r s$$

Hint: The top of the cylinder (and the bottom of the cone) are internal to the pencil and do not contribute to the surface area.



15. The factored form of $2x^2 + 7x + 6$ is:

A. $(x - 2)(2x + 3)$

B. $(x - 2)(2x - 3)$

C. $(x + 2)(2x + 3)$

D. $(x + 2)(2x - 3)$

16. The factored form of $x^2 - 8x + 12$ is:

A. $(x - 6)(x - 2)$

B. $(x - 4)(2x - 3)$

C. $(x - 2)(x + 6)$

D. $(x - 3)(x - 4)$

17. The factored form of $6a - 4a^2 - 2a^3$ is:

A. $2(4a + 1)(2a + 5)$

B. $a(2a + 3)(3a - 1)$

C. $-2a(a + 3)(a - 1)$

D. $2(a - 3)(a + 2)$

18. The factored form of $x^2y^2 - 5xy + 6$ is:

A. $(xy - 3)(xy - 2)$

B. $(xy - 6)(xy - 1)$

C. $(x^2y - 3)(xy^2 - 2)$

D. $(xy^2 - 6)(x^2y - 1)$

19. The factored form of $24x^2 - 72x + 54$ is:

A. $6(2x - 3)^2$

B. $(12x - 2)(2x - 27)$

C. $(24x - 9)(x + 6)$

D. $(8x + 1)(3x + 54)$

20. The factored form of $12 + 21x - 6x^2$ is:

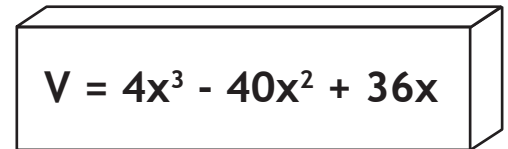
- A. $2(x - 1)(2x + 1)$
- B. $6(3x - 1)(x - 1)$
- C. $-3(x - 4)(2x + 1)$
- D. $3(x - 2)(2x - 3)$

21. The factored form of $8a^2 - 10ab - 12b^2$ is:

- A. $-4(a - b)(2a + 3b)$
- B. $3(a + 2b)(2a - b)$
- C. $-(2a - 3b)(a + b)$
- D. $2(a - 2b)(4a + 3b)$

22. A rectangular prism has a volume of $4x^3 - 40x^2 + 36x$. The dimensions of the prism are:

- A. $2x$, $x + 4$, and $2x + 9$.
- B. $2x$, $x - 12$, and $2x + 3$.
- C. $3x$, $x - 2$, and $x + 3$.
- D. $4x$, $x - 9$, and $x - 1$.



23. The factored form of $9x^2 - 16$ is:

- A. $(9x - 4)(9x + 4)$
- B. $(3x + 4)^2$
- C. $(3x - 4)^2$
- D. $(3x - 4)(3x + 4)$

24. The factored form of $16x^2 + 24x + 9$ is:

- A. $(8x - 3)(8x + 3)$
- B. $(4x + 3)^2$
- C. $(4x - 3)^2$
- D. $(4x - 3)(4x + 3)$

25. Given the expressions $x^2 + 9$ and $x^2 - 8x + 4$:
- A. $x^2 + 9$ factors to $(x + 3)(x - 3)$, and $x^2 - 8x + 4$ factors to $(x - 4)^2$.
 - B. $x^2 + 9$ is unfactorable, and $x^2 - 8x + 4$ factors to $(x - 4)^2$.
 - C. $x^2 + 9$ factors to $(x + 3)(x - 3)$, and $x^2 - 8x + 4$ is unfactorable.
 - D. Both expressions are unfactorable.
26. The factored form of $2x^4 - 32$ is:
- A. $2(x - 2)(x + 2)(x^2 + 4)$
 - B. $(2x^2 - 8)(2x^2 + 4)$
 - C. $2(x - 4)^4$
 - D. $2(x^2 - 4)^2$

Polynomials - ANSWER KEY

Video solutions are in italics.

1. C Expanding Polynomials, *Example 2d*
2. C Expanding Polynomials, *Example 3c*
3. B Expanding Polynomials, *Example 3d*
4. C Expanding Polynomials, *Example 4b*
5. C Expanding Polynomials, *Example 5a*
6. C Expanding Polynomials, *Example 6c*
7. C Expanding Polynomials, *Example 7a*
8. D Expanding Polynomials, *Example 8c*
9. A Expanding Polynomials, *Example 9c*
10. A Greatest Common Factor, *Example 1e*
11. A Greatest Common Factor, *Example 2b*
12. C Greatest Common Factor, *Example 3d*
13. B Greatest Common Factor, *Example 4c*
14. D Greatest Common Factor, *Example 6a*
15. C Factoring Trinomials, *Example 2a*
16. A Factoring Trinomials, *Example 3a*
17. C Factoring Trinomials, *Example 4a*
18. A Factoring Trinomials, *Example 4b*
19. A Factoring Trinomials, *Example 5b*
20. C Factoring Trinomials, *Example 6a*
21. D Factoring Trinomials, *Example 6b*
22. D Factoring Trinomials, *Example 8b*
23. D Special Polynomials, *Example 3a*
24. B Special Polynomials, *Example 3c*
25. D Special Polynomials, *Example 4*
26. A Special Polynomials, *Example 5c*

Math 10C Practice Exam: Tips for Students

- Every question in the practice exam has already been covered in the Math 10C workbook. It is recommended that students refrain from looking at the practice exam until they have completed their studies for the unit.
- Do not guess on a practice exam. The practice exam is a self-diagnostic tool that can be used to identify knowledge gaps. Leave the answer blank and study the solution later.