

Gateway Exam #1 Practice Problems
Working with Fractions

1. A common denominator of $\frac{1}{x}$ and $\frac{x}{4}$ is:

- (a) $x + 4$
- (b) x
- (c) 4
- (d) $4x$
- (e) $x + 1$

2. A common denominator of $\frac{a+1}{b}$ and $\frac{1}{ab}$ is:

- (a) a
- (b) b
- (c) $a + 2$
- (d) $a^2 + ab$
- (e) ab

3. A common denominator of $\frac{x}{1}$ and $\frac{1}{x^2}$ is:

- (a) $1 + x^2$
- (b) x^2
- (c) $x^3 + 1$
- (d) 1
- (e) $(1 - x)(1 + x)$

4. A common denominator of $\frac{3}{4}$ and $\frac{1}{4(x+1)^2}$ is:

- (a) $4(1+x)^2$
- (b) $5 + x^2$
- (c) $x^2 + 4x + 4$
- (d) $4x^2 + 4$
- (e) $(x+1)^2$

5. A common denominator of $\frac{x}{x+1}$ and $\frac{x+1}{x}$ is:

- (a) $x^2 + 1$
- (b) $x(x+1)$

- (c) $2x + 1$
- (d) x^2
- (e) $(x + 1)^2$

6. If you reduced the expression $\frac{1}{x} + \frac{x}{x+1}$ to a single fraction you could obtain:

- (a) $\frac{x+1}{2x+1}$
- (b) $\frac{3}{2}$
- (c) $\frac{x^2+x+1}{x(x+1)}$
- (d) $\frac{2}{3}$
- (e) $\frac{x^2}{x+1}$

7. If you reduced the expression $\frac{a}{b} + \frac{b}{a}$ to a single fraction you could obtain:

- (a) 1
- (b) 2
- (c) $\frac{a+b}{ab}$
- (d) $\frac{a^2+b^2}{ab}$
- (e) $\frac{ab}{a+b}$

8. If you reduced the expression $\frac{1}{2} + \frac{1}{a}$ to a single fraction you could obtain:

- (a) $\frac{1}{2a}$
- (b) $\frac{2}{a}$
- (c) $\frac{1}{2+a}$
- (d) $\frac{2}{2+a}$
- (e) $\frac{a+2}{2a}$

9. If you reduced the expression $\frac{1}{x^2} + \frac{x^2}{x+1}$ to a single fraction you could obtain:

(a) $\frac{x^4 + x + 1}{x^2(x + 1)}$

(b) $\frac{1 + x^2}{x^2(x + 1)}$

(c) $\frac{x^2 + x + 1}{x(x + 1)}$

(d) $\frac{1 + x^2}{x^2 + x + 1}$

(e) $\frac{x^2}{x + 1}$

10. If you reduced the expression $\frac{a^2}{3} + \frac{3}{a}$ to a single fraction you could obtain:

(a) a

(b) $\frac{a^3 + 9}{3a}$

(c) $\frac{3a^2}{3 + a}$

(d) $\frac{a^2 + 3}{3 + a}$

(e) $\frac{a^2 + 3}{3a}$

11. If you reduced the expression $a - \frac{1}{a}$ to a single fraction you could obtain:

(a) $\frac{a - 1}{a}$

(b) $\frac{1 - a}{a^2}$

(c) $\frac{a^2 - 1}{a}$

(d) $\frac{1}{a^2}$

(e) The given quantities cannot be combined into a single fraction.

12. If you reduced the expression $\frac{1}{x} - \frac{1}{x + 1}$ to a single fraction you could obtain:

(a) 0

(b) $\frac{0}{-1}$

(c) $\frac{x^2 - 1}{x(x + 1)}$

- (d) $\frac{1}{-1}$
(e) $\frac{1}{x(x+1)}$

13. If you reduced the expression $\frac{2}{x+1} - \frac{1}{x+1}$ to a single fraction you could obtain:

- (a) $\frac{1}{2x+2}$
(b) $\frac{1}{0}$
(c) $\frac{x^2+x+1}{x+1}$
(d) $\frac{1}{x+1}$
(e) $\frac{2x^2+2}{x+1}$

14. If you reduced the expression $\frac{x+1}{x} - \frac{2}{x+1}$ to a single fraction you could obtain:

- (a) $\frac{x^2+1}{x(x+1)}$
(b) $\frac{x-1}{x(x+1)}$
(c) $\frac{x^2+x+1}{x(x+1)}$
(d) $\frac{x^2+2x-1}{x(x+1)}$
(e) $\frac{x}{x+1}$

15. If you reduced the expression $\frac{a^2}{b} - \frac{b}{a}$ to a single fraction you could obtain:

- (a) $\frac{a^2-b}{b-a}$
(b) $\frac{a^3-b^2}{ab}$
(c) $\frac{a^2-b}{ab}$
(d) $\frac{a^2b}{b-a}$
(e) $\frac{a^2+b}{b-a}$

16. If you reduced the expression $\frac{1}{x} \cdot \frac{x}{x+1}$ to a single fraction you could obtain:

(a) $\frac{x}{2x+1}$

(b) $\frac{2x}{x+1}$

(c) $\frac{1}{x+1}$

(d) $\frac{1}{x^2+1}$

(e) $\frac{x^2}{x+1}$

17. If you reduced the expression $\frac{a^3}{1+b} \cdot \frac{1+b}{a^6}$ to a single fraction you could obtain:

(a) $\frac{(1+b)^2}{a^3}$

(b) $\frac{1}{a^3}$

(c) $\frac{a^3}{(1+b)^2}$

(d) $\frac{a^9}{(1+b)^2}$

(e) $\frac{a^3+b+1}{a^6+b+1}$

18. If you reduced the expression $\frac{\sqrt{x}}{x} \cdot \frac{x}{\sqrt{x}+1}$ to a single fraction you could obtain:

(a) $\frac{x+\sqrt{x}}{x+\sqrt{x}+1}$

(b) $\frac{x^{3/2}}{x^{3/2}+1}$

(c) $\frac{x+\sqrt{x}}{x(\sqrt{x}+1)}$

(d) $1 + \frac{1}{\sqrt{x}}$

(e) $\frac{\sqrt{x}}{\sqrt{x}+1}$

19. If you reduced the expression $\frac{x-1}{x+1} \cdot \frac{x}{x+1}$ to a single fraction you could obtain:

(a) $\frac{x}{2x+2}$

(b) $\frac{2x-1}{2x+1}$

(c) $\frac{x^2+x+1}{x(x+1)}$

(d) $\frac{x^2-x}{(x+1)^2}$

(e) $\frac{x}{x+1}$

20. If you reduced the expression $\frac{1}{x-1} \cdot \frac{x^2}{x+1}$ to a single fraction you could obtain:

(a) $\frac{x^2}{x^2-1}$

(b) $\frac{x^2+1}{x^2-1}$

(c) $\frac{1+x}{x^2-1}$

(d) $\frac{x^2-1}{x+1}$

(e) $\frac{x^2}{x+1}$

21. If you reduced the expression $\frac{\frac{1}{x}}{\frac{x}{x}}$ to a single fraction you could obtain:

(a) $\frac{1}{2x}$

(b) x^2

(c) 1

(d) $\frac{1}{x^2}$

(e) $\frac{x^2}{x+1}$

22. If you reduced the expression $\frac{\frac{a}{b}}{\frac{a}{b}}$ to a single fraction you could obtain:

(a) $\frac{a^2}{b^2}$

(b) $\frac{2a}{b}$

(c) $\frac{a}{b}$

(d) a^2b^2

(e) 1

23. If you reduced the expression $\frac{x^2}{\frac{1}{x}}$ to a single fraction you could obtain:

- (a) x^3
- (b) $\frac{1}{x^3}$
- (c) x
- (d) $\frac{1}{x}$
- (e) $\frac{x^2}{x+1}$

24. If you reduced the expression $\frac{\frac{x+1}{x}}{x}$ to a single fraction you could obtain:

- (a) $\frac{x+1}{2x}$
- (b) $1 + \frac{1}{x}$
- (c) $\frac{x+1}{x^2}$
- (d) 2
- (e) $\frac{2}{x}$

25. If you reduced the expression $\frac{1+x}{\frac{1}{x^2}}$ to a single fraction you could obtain:

- (a) $\frac{x+1}{2x+1}$
- (b) $x^2 + x^3$
- (c) $\frac{x^2 + x + 1}{x+1}$
- (d) $\frac{2x^2}{1+x}$
- (e) $\frac{x}{x^2 + x^3}$

26. Simplifying the expression $\frac{x^3 - 3x^2}{x}$ could produce:

- (a) $x^2 - 3x$
- (b) $x^2 - 3x^2$
- (c) $-2x^2$
- (d) $x^3 - 3x$
- (e) $\frac{x}{x^3 - 3x^2}$

27. Simplifying the expression $\frac{\sqrt{x}(x-1)}{x^2-1}$ could produce:

- (a) $x^{3/2} + 1$
- (b) $x^2 - 1$
- (c) $\frac{1}{x+1}$
- (d) $\frac{\sqrt{x}}{x+1}$
- (e) $\frac{1}{\sqrt{x}-1}$

28. Simplifying the expression $\frac{x^3}{x+x^2}$ could produce:

- (a) 1
- (b) $\frac{x}{1+x}$
- (c) x^2
- (d) $\frac{1}{x} + x$
- (e) $\frac{x^2}{1+x}$

29. Simplifying the expression $\frac{\frac{1}{x} + x}{x}$ could produce:

- (a) $\frac{1}{x} + 1$
- (b) $\frac{1+x^2}{x^2}$
- (c) $\frac{1}{x^2} + x$
- (d) $x^2 + 1$
- (e) $\frac{1}{x^2} - 1$

30. Simplifying the expression $\frac{\sqrt{x}+x}{\sqrt{x}}$ could produce:

- (a) $1+x$
- (b) $2\sqrt{x}$
- (c) $1+\sqrt{x}$
- (d) x^2+1
- (e) $x + \frac{1}{\sqrt{x}}$

Answers:

1.	d	2.	e	3.	b	4.	a	5.	b
6.	c	7.	d	8.	e	9.	a	10.	b
11.	c	12.	e	13.	d	14.	a	15.	b
16.	c	17.	b	18.	e	19.	d	20.	a
21.	d	22.	e	23.	a	24.	c	25.	b
26.	a	27.	d	28.	e	29.	b	30.	c