

## Module E Test Review

## Evaluate each expression

1)  $\frac{x^2 - 2x - 3}{x - 2}$  when  $x = 3, 5,$  and  $-4$

2)  $\frac{x^2 - 3x - 4}{x - 4}$  when  $x = 5, -1,$  and  $4$

## Simplify each expression.

3)  $\frac{x^2 - 16}{4x + 16}$

4)  $\frac{n^2 + 10n + 25}{n^2 + 9n + 20}$

5)  $\frac{10a - 4}{4a + 10}$

6)  $\frac{k^2 - 6k + 8}{3k - 12}$

7)  $\frac{3b^2 + 18b + 27}{b^2 + 8b + 15}$

8)  $\frac{2v^2 + 6v - 8}{v^3 + 8v^2 + 16v}$

9)  $\frac{2k}{6} \div \frac{4k^4}{4}$

10)  $\frac{2}{7x^2} \div \frac{6}{8}$

11)  $\frac{5r}{4r^2} \div \frac{2}{9}$

12)  $\frac{4}{10} \cdot \frac{9x^2}{5x}$

13)  $\frac{p - 8}{40 - 5p} \cdot \frac{p^2 - 15p + 54}{p^2 - 5p - 6}$

14)  $\frac{10x^3 + 40x^2}{x^2 + 11x + 30} \div \frac{x^2 + 9x + 20}{x + 5}$

15)  $\frac{n^2 - 16n + 63}{10n - 70} \cdot \frac{n + 2}{8n + 16}$

16)  $\frac{6b + 60}{b^2 + 18b + 80} \cdot \frac{8b^3 - 12b^2}{12b - 18}$

17)  $\frac{70r + 90}{10r + 100} \div \frac{35r^2 + 45r}{2r^2 + 20r}$

18)  $\frac{x^2 + 9x - 10}{x - 10} \cdot \frac{x^2 - x - 90}{x^2 + 9x - 10}$

19)  $\frac{x^2 - 1}{2x - 4} \cdot \frac{x^2 - 4}{x^2 - x - 2} \div \frac{x^2 + x - 2}{3x - 6}$

20)  $\frac{x^2 + 3x + 9}{x^2 + x - 12} \cdot \frac{x^2 + 2x - 8}{x^3 - 27} \div \frac{x^2 - 4}{x^2 - 6x + 9}$

## Find the least common multiple

21)  $x^2 + 3x + 2$  and  $x^2 + 5x + 6$

22)  $x^2 - 9$  and  $x^2 - 6x + 9$

23)  $x^2 - 7x + 10$  and  $x^2 - 2x - 15$  and  $x^2 + x - 6$

**Add or Subtract**

24)  $\frac{x^2}{x-2} - \frac{6x-8}{x-2}$

25)  $\frac{2x^2+3}{x^2-6x+5} - \frac{x^2-5x+9}{x^2-6x+5}$

26)  $\frac{2x}{x^2-1} - \frac{3}{x^2+5x+4}$

27)  $\frac{2x}{x^2-9} + \frac{5}{x^2+x-6}$

28)  $\frac{x-1}{x^2+3x+2} + \frac{x+5}{x^2+4x+3}$

29)  $\frac{3x-8}{x^2+6x+8} + \frac{2x-3}{x^2+3x+2}$

**Solve each proportion.**

30)  $\frac{9}{7} = \frac{n}{9}$

31)  $\frac{5}{8} = \frac{b-3}{5}$

32)  $\frac{9}{v+6} = \frac{8}{10}$

33)  $\frac{2}{5} = \frac{x-4}{x}$

34)  $\frac{7}{n+10} = \frac{9}{n}$

35)  $\frac{a-4}{3} = \frac{a+8}{4}$

36)  $\frac{k+5}{k+10} = \frac{9}{8}$

37)  $\frac{p-5}{3} = \frac{p+1}{5}$

**Use a proportion to answer each question. Note: You must use a proportion for credit!**

38) If a 10 ft tall ladder casts a 5 ft long shadow then how tall is a statue that casts a 8 ft shadow?

39) A 8 ft tall adult elephant standing next to a bird bath casts a 6 ft shadow. If the bird bath is 4 ft tall then how long is its shadow?

40) A map has a scale of 2 cm : 12 km. If Georgetown and Salem are 8 cm apart on the map then how far apart are the real cities?

41) Find the distance between Smithville and Madison on a map with a scale of 2 cm : 15 km if they are actually 30 km apart.

42) Find the distance between Smithville and Santa Cruz on a map with a scale of 3 cm : 12 km if they are actually 36 km apart.

43) A woman that is 6 ft tall casts a shadow that is 3 ft long. Find the length of the shadow that a 16 ft ladder casts.

**Given 1 mi = 1.61 km, 1 mi = 5280 ft and 3600 sec = 1 hr, make the following conversions**

44) 1200 ft to km

45) 5.2 km to ft

46) 20 mi per hr to km per min

47) 20 km per min to mi per hr

## Answers to Module E Test Review

1)  $0, 4, -\frac{7}{2}$

5)  $\frac{5a-2}{2a+5}$

9)  $\frac{1}{3k^3}$

13)  $-\frac{(p-9)}{5(p+1)}$

17)  $\frac{2}{5}$

21)  $(x+1)(x+2)(x+3)$

24)  $x-4$

28)  $\frac{2x+7}{(x+3)(x+2)}$

32)  $\{5.25\}$

36)  $\{-50\}$

40) 48 km

44) 0.3659 km

2) 6, 0, undefined

6)  $\frac{k-2}{3}$

10)  $\frac{8}{21x^2}$

14)  $\frac{10x^2}{(x+5)(x+6)}$

18)  $x+9$

22)  $(x+3)(x-3)^2$

25)  $\frac{x+6}{x-5}$

29)  $\frac{5(x-2)}{(x+4)(x+1)}$

33)  $\{6.67\}$

37)  $\{14\}$

41) 4 cm

45) 17053.42 ft

3)  $\frac{x-4}{4}$

7)  $\frac{3(b+3)}{b+5}$

11)  $\frac{45}{8r}$

15)  $\frac{n-9}{80}$

19)  $\frac{3}{2}$

23)  $(x-5)(x-2)(x+3)$

26)  $\frac{2x+3}{(x-1)(x+4)}$

30)  $\{11.57\}$

34)  $\{-45\}$

38) 16 ft

42) 9 cm

46) 0.5367 km per min

4)  $\frac{n+5}{n+4}$

8)  $\frac{2(v-1)}{v(v+4)}$

12)  $\frac{18x}{25}$

16)  $\frac{4b^2}{b+8}$

20)  $\frac{1}{x+2}$

27)  $\frac{2x-5}{(x-3)(x-2)}$

31)  $\{6.13\}$

35)  $\{40\}$

39) 3 ft

43) 8 ft

47) 745.34 mi per hr