

Chapter 8 Test Review

① Solve: $y^2 - 8y + 16 = 0$

$$\begin{array}{r} -48 \\ -12 \times 4 \\ -8 \end{array}$$

$$y^2 - 8y - 48 = 0$$

$$(y-12)(y+4) = 0$$

$$y-12=0 \quad y+4=0$$

$$y=12 \quad y=-4$$

$$\boxed{\{-4, 12\}}$$

② Solve: $x^2 + 12x + 36 = 25$

$$\begin{array}{r} 11 \\ 11 \times 1 \\ 12 \end{array}$$

$$x^2 + 12x + 11 = 0$$

$$(x+11)(x+1) = 0$$

$$x+11=0 \quad x+1=0$$

$$x=-11 \quad x=-1$$

$$\boxed{\{-11, -1\}}$$

③ Factor: $15b^2 - 24bc$

$$\boxed{3b(5b - 8c)}$$

④ Factor: $2x^3 + 8x$

$$\boxed{2x(x^2 + 4)}$$

⑤ Factor: $36x^8 - 60x^4 + 25$

$$\begin{array}{c} \downarrow \quad \quad \quad \downarrow \\ 6x^4 \quad \quad \quad 5 \\ \boxed{(6x^4 - 5)^2} \end{array}$$

⑥ Factor: $45g^3 - 20g$

$$\begin{array}{c} \downarrow \quad \quad \quad \downarrow \\ 5g \quad \quad \quad 2 \\ \downarrow \quad \quad \quad \downarrow \\ 3g \quad \quad \quad 2 \end{array}$$

$$\boxed{5g(3g+2)(3g-2)}$$

⑦ Factor: $10p^5 - 81p$

$$\begin{array}{c} p(\sqrt{10p^4} - \sqrt{81}) \\ p(4p^2 + 9)(4p^2 - 9) \\ \boxed{p(4p^2 + 9)(2p+3)(2p-3)} \end{array}$$

⑧ Solve: $2m^2 = 32m$

$$2m^2 - 32m = 0$$

$$2m(m-16) = 0$$

$$2m = 0 \quad m-16 = 0$$

$$m = 0 \quad m = 16$$

$$\boxed{\{0, 16\}}$$

⑨ Factor: $36x^2 - 100y^2$

$$\begin{array}{c} 4(9x^2 - 25y^2) \\ \downarrow \quad \quad \quad \downarrow \\ 3x \quad \quad \quad 5y \end{array}$$

$$\boxed{4(3x+5y)(3x-5y)}$$

⑩ Factor: $j^2 - 9jk - 10k^2$

$$\begin{array}{r} -10 \\ -10 \times 1 \\ -9 \end{array}$$

$$\boxed{(j-10k)(j+k)}$$

11) Simplify:

$$(k^3 - 2k^2 + 4k + 10) - (2k + k^2 - 3)$$

$$k^3 - 2k^2 + 4k + 10 - 2k - k^2 + 3$$

$$k^3 - 3k^2 + 8k + 9$$

12) Simplify:

$$4x^2(x-7) - 5x(x^2 - 2x - 2) + 3x(4x-2)$$

$$4x^3 - 28x^2 - 5x^3 + 10x^2 + 10x + 12x^2 - 6x$$

$$-x^3 - 6x^2 + 4x$$

13) Simplify: $(2p + 4q)^2$

$$4p^2 + 16pq + 16q^2$$

14) Simplify: $(3x - 2y^2)(3x + 2y^2)$

$$9x^2 - 4y^4$$

15) Simplify:

	$3u^2$	$+2u$	$+2$
$3u^2$	$9u^4$	$6u^3$	$12u^2$
$-4u$	$-12u^3$	$-8u^2$	$8u$
-5	$-15u^2$	$-10u$	-10

$$9u^4 - 6u^3 - 17u^2 - 18u - 10$$

16) $x=1st \#$ $(x+2)(x+4)$
 $x+2=2nd \#$
 $x+4=3rd \#$ $x^2 + 2x + 4x + 8$

$$x^2 + 6x + 8$$

(17) Solve:
 $18a^2 + 10a = -11a + 4$
 $18a^2 + 21a - 4 = 0$

$\frac{4}{3} = \frac{24}{18} \times \frac{-3}{18} = \frac{-1}{6}$

$(6a-1)(3a+4) = 0$
 $6a-1=0 \quad 3a+4=0$
 $6a=1 \quad 3a=-4$
 $a = \frac{1}{6} \quad a = -\frac{4}{3}$
 $\left\{ \frac{1}{6}, -\frac{4}{3} \right\}$

(21) Factor: $10x^2 + 21xy - 10y^2$
 $(2x+5y)(5y-2x)$

$\frac{5}{2} = \frac{25}{10} \times \frac{-4}{21} = \frac{-2}{5}$

(22) Factor: $24c^3 - 84c^2 + 10c - 35$
 $12c^2(2c-7) + 5(2c-7)$
 $(12c^2+5)(2c-7)$

(18) Factor:
 $3a^2 + 30a + 103$
 $3(a^2 + 10a + 21)$
 $3(a+7)(a+3)$

$\frac{21}{3} = 7$
 $\frac{10}{10} = 1$

(23) Factor: $12x^3 + 16x^2 - 3x - 4$
 $4x^2(3x+4) - 1(3x+4)$
 $(4x^2-1)(3x+4)$
 $(2x-1)(2x+1)(3x+4)$

(19) Factor: $12x^3 + 34x^2 - 28x$
 $2x(6x^2 + 17x - 14)$
 $2x(2x+7)(3x-2)$

$\frac{2}{2} = \frac{21}{17} \times \frac{-4}{6} = \frac{-2}{3}$

(24) Factor: $12e^4 + 18e^3 + 30e^2 + 54e$
 $6e(2e^3 + 3e^2 + 10e + 9)$
 $6e(e^2(2e+3) + 3(2e+3))$
 $6e(e^2+3)(2e+3)$

(20) Solve: $6b^2 - 5b = 4$
 $6b^2 - 5b - 4 = 0$
 $(3b-4)(2b+1) = 0$
 $3b-4=0 \quad 2b+1=0$
 $3b=4 \quad 2b=-1$
 $b = \frac{4}{3} \quad b = -\frac{1}{2}$
 $\left\{ \frac{4}{3}, -\frac{1}{2} \right\}$

$\frac{4}{3} = \frac{24}{18} \times \frac{-3}{5} = \frac{-1}{5}$

(25) Simplify: $3x(3x^2 - 2x)(6x-4)$
 $3x(18x^3 - 24x^2 + 8x)$
 $54x^4 - 72x^3 + 24x^2$

(26)

	$20^2 + 40$	-5
30	60^3	150
-4	-80^2	20

$(6y^3 + 4y^2 - 31y + 20)$

(27) Factor: $32x^5 - 1102x$

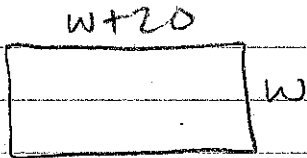
$$2x(11x^4 - 551)$$

\downarrow \downarrow
 $4x^2$ 9

$$2x(4x^2 + 9)(4x^2 - 9)$$

$$2x(4x^2 + 9)(2x + 3)(2x - 3)$$

(28)



The dimensions are 10 yd x 30 yd.

$$w(w+20) = 300$$

$$w^2 + 20w = 300$$

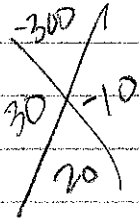
$$-300 \quad -300$$

$$w^2 + 20w - 300 = 0$$

$$(w+30)(w-10) = 0$$

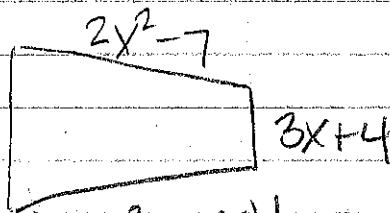
$$w+30=0 \quad w-10=0$$

$$w = -30 \quad w = 10$$



$$P = 12x^2 - 2x + 15$$

(29)



$$(2x^2 - 7) + (3x + 4) + (3x^2 - 2x - 11)$$

$$5x^2 + x - 14$$

$$12x^2 - 2x + 15 = (5x^2 + x - 14)$$

$$(12x^2 - 2x + 15) - (5x^2 + x - 14)$$

$$7x^2 - 3x + 29$$