

Last Name: d. Zito
 First Name: Answer Key

Date: _____
 Grade 9
 Term 2 Practice Test 4

Factoring

1) Factor the following.

a) $3m - 12$ $3(m-4)$	b) $16x^2 + 2x$ $2x(8x + 1)$
c) $6bc - 18ab^2c^3$ $6bc(1 - 3abc^2)$	d) $4seccareccia - 2stuckey$ $4se^2c^4a^2ri - 2stuckey$ $2sce(2ec^3a^2ri - tucky)$
e) $fh - 4f^2hy$ $fh(i - 4fy)$	f) $6rajakumar + 2parker$ $6r^2a^3jkum + 2par^2ke$ $2r^2a(ajkum + pke)$
g) $9cde - 33e$ $3e(3cd - 11)$	h) $39rst + 13rt$ $r3rt(3s + 1)$
i) $5x^2y^3 - xy^3z^4$ $5xy^3(x - z^4)$	j) $4fu^2 - 2fu^4$ $2fu^2(2 - u^2)$
k) $3az^4 + 6az$ $3az(z^3 + 2)$	l) $99 - 9c^2$ $9(11 - c^2)$
m) $7gh + 28h^2$ $7h(g + 4h)$	n) $3x^5 - 6x^7 + 9z$ $3(x^5 - 2x^7 + 3z)$
o) $8a^4 - 4a^3 + 12a$ $4a(2a^3 - a^2 + 3)$	p) $dfz^4 - 6fz^5$ $fz^4(d - 2z)$
q) $47y^2 + 18y^5 + 37y$ $y(47y + 18y^4 + 37)$	r) $wz^4 - wz$ $wz(z^3 - 1)$

2) Write the following in decimal notation.

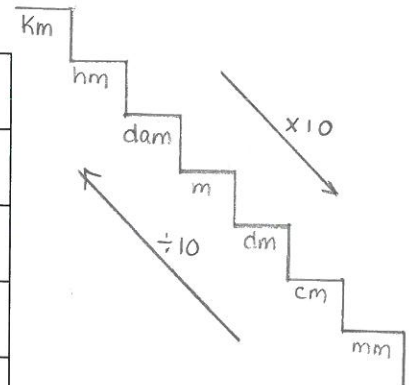
a) $7.58 \times 10^6 =$ <u>7580 000</u>	b) $0.000035 \times 10^3 =$ <u>0.035</u>
c) $5.24 \times 10^{-1} =$ <u>0.524</u>	d) $0.2 \times 10^{-4} =$ <u>0.00002</u>
e) $6.19 \times 10^{-3} =$ <u>0.00619</u>	f) $0.0538 \times 10^7 =$ <u>538 000</u>

3) Simplify. Write each answer in scientific notation. Round to three decimal places if needed.

a) $(9.7 \times 10^5)(3.9 \times 10^{-8})$ $37,83 \times 10^{-3}$ 3.783×10^{-4}	b) $(7.88 \times 10^5)(4.9 \times 10^{-4})$ $38,612 \times 10^1$ 3.8612×10^0
c) $\frac{(9.6 \times 10^{-4})}{(3 \times 10^6)} = 3.2 \times 10^{-10}$	d) $\frac{(14 \times 10^6)}{(7 \times 10^{-4})} = 2 \times 10^{10}$

4) Convert the following.

a)	$27.3m = \underline{0.273} \text{ hm}$
b)	$800cm^2 = \underline{8} \text{ dm}^2$
c)	$4\,000\,000cm^3 = \underline{4000} \text{ L}$
d)	$638L = \underline{638000} \text{ cm}^3$
e)	$13\,250dm^3 = \underline{13\,250\,000} \text{ mL}$
f)	$12hm^3 = \underline{12\,000\,000\,000} \text{ L}$



5) Determine if the following statements are **true** or **false**. The entire word must be written.

a. $\mathbb{N} \subseteq \mathbb{Z}$ TRUE	b. $768 \in \mathbb{Z}$ TRUE
--	---------------------------------

6) TRUE or FALSE. All of the following are irrational numbers. $-78, \sqrt{169}, 18$
 $\hookrightarrow 13$

Answer: FALSE

7) Complete the following chart.

Inequality	Number line	Bracket Notation
$-1 \leq x < 2$		$[-1, 2[$

8) Solve for the unknown variables (no decimals).

<p>a) $3(-2x) - 7 = -5(4x) - 9$ $-6x - 7 = -20x - 9$ $-6x + 20x = -9 + 7$ $\frac{14x}{14} = \frac{-2}{14}$ $x = -\frac{1}{7}$</p> <p>Answer: _____</p>	<p>b) $-5(2x^2) + 35 = -13 - 2x^2$ $-10x^2 + 35 = -13 - 2x^2$ $-10x^2 + 2x^2 = -13 - 35$ $\frac{-8x^2}{-8} = \frac{-48}{-8}$ $x^2 = 6$ $x = \sqrt{6}$</p> <p>Answer: _____</p>
<p>c) $3x - 4 + 12 = 13x + 7(2x)$ $3x + 8 = 13x + 14x$ $3x + 8 = 27x$ $8 = 27x - 3x$ $\frac{8}{24} = \frac{24x}{24}$ $\frac{1}{3} = x$</p> <p>Answer: _____</p>	<p>d) $-8(-5x) = 13x + 3x + 72$ $40x = 16x + 72$ $40x - 16x = 72$ $\frac{24x}{24} = \frac{72}{24}$ $x = 3$</p> <p>Answer: _____</p>

9) Write the following as a power of 10.

a) $10\,000 = 10^4$ b) $0.000\,001 = 10^{-6}$

10) State if the following polynomial expressions are monomials, binomials or trinomials.

$(5x^2y^3) + 9x^2y^{-3} + 12x^2y^3$ Answer: Binomial
 $17x^2y^3 + 9x^2y^{-3}$

11) Write the following in exponential form and in standard form.

$\sqrt[3]{64} = 64^{\frac{1}{3}} = 4$

12) Simplify the following expressions so they only have positive exponents.

<p>a) $(7x^2y^{-3})^{-2} = 7^{-2}x^{-4}y^6$ $= \frac{y^6}{49x^4}$</p>	<p>b) $\frac{169x^{-8}y^{-7}}{13x^{-5}} = 13x^{-3}y^{-7}$ $= \frac{13}{x^3y^7}$</p>
--	--

13) Determine the degree of the following polynomial expressions.

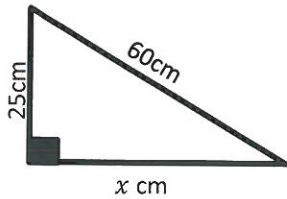
$(2x^3)^7 + 3(5x^2)$ Answer: degree = 21
 $2^7x^{21} + 15x^2$
 $128x^{21} + 15x^2$

14) Simplify the following algebraic expressions. If the equation is already in simplified form rewrite the statement in the space provided.

<p>a) $(2x - 3)(5x + 3)$ $= 10x^2 + 6x - 15x - 9$ $= 10x^2 - 9x - 9$</p>	<p>b) $(-2x^6 + 8x^4) \div 2x$ $= \frac{-2x^6 + 8x^4}{2x}$ $= \frac{-2x^6}{2x} + \frac{8x^4}{2x}$ $= -x^5 + 4x^3$</p>
<p>c) $(15x^3 - 5x) - (3x^2 - x)$ $= 15x^3 - 5x - 3x^2 + x$ $= 15x^3 - 3x^2 - 4x$</p>	<p>d) $18x^2 + 6x^2 - 8 + 4$ $24x^2 - 4$</p>
<p>e) $(4x^3 - 5)^2$ $(4x^3 - 5)(4x^3 - 5)$ $16x^6 - 20x^3 - 20x^3 + 25$ $16x^6 - 40x^3 + 25$</p>	<p>f) $(6x^3 - 3x) - (2x^2 - x)$ $6x^3 - 3x - 2x^2 + x$ $6x^3 - 2x^2 - 2x$</p>

15) Determine the length of the missing side. Images are not drawn to scale.

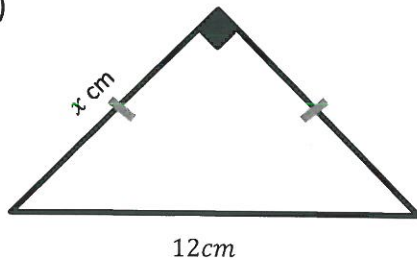
a)



$$\begin{aligned} a^2 + b^2 &= c^2 \\ x^2 + 25^2 &= 60^2 \\ x^2 + 625 &= 3600 \\ x^2 &= 3600 - 625 \\ x^2 &= 2975 \\ x &= \sqrt{2975} \\ x &\approx 54.54 \end{aligned}$$

Answer: 54.54 cm

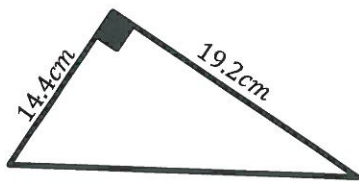
b)



$$\begin{aligned} a^2 + b^2 &= c^2 \\ x^2 + x^2 &= 12^2 \\ \frac{2x^2}{2} &= \frac{144}{2} \\ x^2 &= 72 \\ x &= \sqrt{72} \\ x &\approx 8.49 \end{aligned}$$

Answer: 8.49 cm

c)



$$\begin{aligned} a^2 + b^2 &= c^2 \\ (14.4)^2 + (19.2)^2 &= c^2 \\ 207.36 + 368.64 &= c^2 \\ 576 &= c^2 \\ \sqrt{576} &= c \\ 24 &= c \end{aligned}$$

Answer: 24 cm

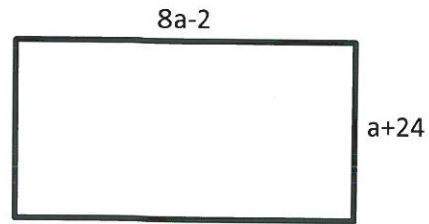
- 16) The perimeter of the rectangle is 260cm. The algebraic expression for the length is $8a-1$. The algebraic expression for the width is $a+24$. What is the value of the length and width of the rectangle?

$$P = 2(\text{Length}) + 2(\text{width})$$

$$P = 2(8a-2) + 2(a+24)$$

$$P = 16a - 4 + 2a + 48$$

$$P = 18a + 44$$



$$260 = 18a + 44$$

$$260 - 44 = 18a$$

$$\frac{216}{18} = \frac{18a}{18}$$

$$a = 12$$

$$\begin{aligned} \text{Length} &= 8a - 2 \\ &= 8(12) - 2 \\ &= 96 - 2 \\ &= 94 \end{aligned}$$

$$\begin{aligned} \text{width} &= a + 24 \\ &= 12 + 24 \\ &= 36 \end{aligned}$$

- 17) Consider the polynomials:

$$A = -x^2 - 6x + 7$$

$$B = x^2 - 8$$

$$C = -2x - 5$$

Find.

$$4(A+C) - 2(B)$$

$$4[(-x^2 - 6x + 7) + (-2x - 5)] - 2[x^2 - 8]$$

$$4[-x^2 - 6x + 7 - 2x - 5] - 2x^2 + 16$$

$$4(-x^2 - 8x + 2) - 2x^2 + 16$$

$$-4x^2 - 32x + 8 - 2x^2 + 16$$

$$-6x^2 - 32x + 24$$

Answer: _____