

Last Name: d. Zito
 First Name: Answer Key

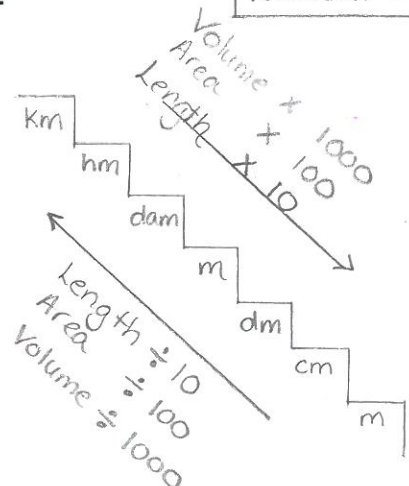
Date: _____
 Grade 9
 Term 1 Practice Test

Length: $10^1 = 10$
 Area: $10^2 = 100$
 Volume: $10^3 = 1000$

Scientific Notation/Measurements

1) Convert the following.

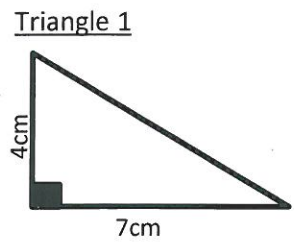
a)	$5\text{cm} = \underline{0.00005} \text{ km}$
b)	$43.21\text{km} = \underline{432.1} \text{ hm}$
c)	$87\,549\text{cm}^2 = \underline{0.0000087549} \text{ km}^2$
d)	$5\,000\,000\text{mm}^2 = \underline{5} \text{ m}^2$
e)	$4\text{m}^3 = \underline{4\,000\,000} \text{ cm}^3$
f)	$0.234\text{dam}^3 = \underline{0.000234} \text{ hm}^3$
g)	$70\text{cm}^3 = \underline{0.07} \text{ L}$
h)	$58\text{L} = \underline{58\,000\,000} \text{ mm}^3$
i)	$5\text{m}^3 = \underline{5\,000} \text{ L}$
j)	$4723.4\text{cL} = \underline{47.23} \text{ dm}^3$



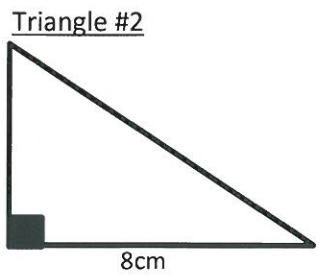
$1\text{dm}^3 = 1\text{L}$

g) $70\text{cm}^3 = 0.07\text{dm}^3 = 0.07\text{L}$
 h) $58\text{L} = 58\text{dm}^3 = 58\,000\,000\text{mm}^3$
 i) $5\text{m}^3 = 5000\text{dm}^3 = 5000\text{L}$
 j) $4723.4\text{cL} = 47.23\text{L} = 47.23\text{dm}^3$

2) The base and height of Triangle#1 are 7cm and 4cm respectively. The base of Triangle#2 is 8cm. The area of Triangle#2 is exactly double the area of Triangle#1. What is the hypotenuse of Triangle#2?



$$\text{Area}_1 = \frac{bh}{2} = \frac{(7)(4)}{2} = 14\text{cm}^2$$



$$\text{Area}_2 = 2(14) = 28\text{cm}^2$$

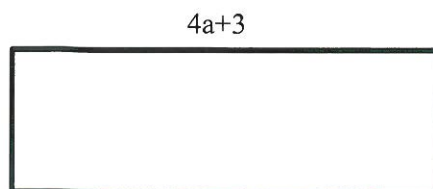
$$\begin{aligned} \text{Area}_2 &= \frac{bh}{2} \\ 28 &= \frac{8h}{2} \\ 28 &= \frac{4h}{1} \\ \frac{28}{4} &= \frac{4h}{4} \\ h &= 7\text{cm} \end{aligned}$$

$$\begin{aligned} a^2 + b^2 &= c^2 \\ 7^2 + 8^2 &= c^2 \\ 49 + 64 &= c^2 \\ 113 &= c^2 \\ \sqrt{113} &= c \\ c &\approx 10.63\text{cm} \end{aligned}$$

The hypotenuse is 10.63 cm.

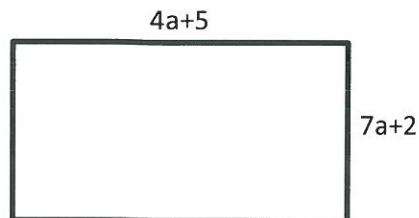
- 3) The perimeter of the rectangle is 74cm. The algebraic expression for the length of the rectangle is $4a + 3$. What is the algebraic expression for the width of the rectangle?

$$\begin{aligned} \text{Perimeter} &= 2(\text{Length}) + 2(\text{width}) \\ 74 &= 2(4a+3) + 2(\text{width}) \\ 74 &= 8a+6 + 2(\text{width}) \\ 74-8a-6 &= 2(\text{width}) \\ \frac{-8a+68}{2} &= \frac{2(\text{width})}{2} \\ \frac{-8a+68}{2} &= \text{width} \\ -4a+34 &= \text{width} \end{aligned}$$



- 4) The perimeter of the rectangle is 58cm. The algebraic expression for the length is $4a+5$. The algebraic expression for the width is $7a+2$. What is the value of the length and width of the rectangle?

$$\begin{aligned} \text{Perimeter} &= 2(\text{Length}) + 2(\text{width}) \\ 58 &= 2(4a+5) + 2(7a+2) \\ 58 &= 8a+10 + 14a+4 \\ 58 &= 22a+14 \\ 58-14 &= 22a \\ \frac{44}{22} &= \frac{22a}{22} \\ a &= 2 \end{aligned}$$



$$\begin{aligned} \text{Length} &= 4a+5 \\ &= 4(2)+5 \\ &= 8+5 \\ &= 13 \end{aligned}$$

$$\begin{aligned} \text{Width} &= 7a+2 \\ &= 7(2)+2 \\ &= 14+2 \\ &= 16 \end{aligned}$$


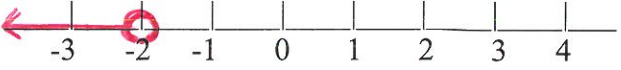
5) Determine if the following statements are **true** or **false**. The entire word must be written.

a. $\mathbb{N} \subseteq \mathbb{Z} \subseteq \mathbb{Q}' \subseteq \mathbb{R}$ FALSE	b. $-2.4 \in \mathbb{Z}$ FALSE
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6) TRUE or FALSE. All of the following are irrational numbers. $\sqrt{8}, \sqrt[2]{58}, \sqrt[3]{144}$

Answer: TRUE

7) Complete the following chart.

(a)	$-1 \leq x < 0$		$[-1, 0[$
(b)	$x < -2$		$] -\infty, -2[$

8) Write each of the following as a power of 10.

a) $100\,000 = 10^5$

b) $0.000\,0001 = 10^{-7}$

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

a)	$2x^2y^3$ Answer: Monomial	b)	$7x^9 - 8x^2 + 6$ Answer: Trinomial
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10) Write the following in exponential form and in standard form.

a)	$\sqrt[2]{36} = 36^{\frac{1}{2}} = 6$	b)	$\sqrt[3]{27} = 27^{\frac{1}{3}} = 3$
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11) Simplify the following expressions so they only have positive exponents.

<p>a) $(6x^{-5}y^{-8})^{-2} = 6^{-2}x^{10}y^{16}$ $= \frac{x^{10}y^{16}}{6^2}$ $= \frac{x^{10}y^{16}}{36}$</p>	<p>b) $(9a^{-1}bc^{-8})^3 = 9^3a^{-3}b^3c^{-24}$ $= \frac{729b^3}{a^3c^{24}}$</p>
<p>c) $\frac{72x^{-9}y^5}{9x^{-2}} = 8x^{-7}y^5$ $= \frac{8y^5}{x^7}$</p>	<p>d) $\left(\frac{44x^{-13}y^{-5}}{4x^2y^{-3}}\right)^{-2} = (11x^{-15}y^{-2})^{-2}$ $= 11^{-2}x^{30}y^4$ $= \frac{x^{30}y^4}{11^2}$ $= \frac{x^{30}y^4}{121}$</p>

12) Determine the degree of the following polynomial expressions.

<p>a) $(2x^2)^4 + 5x^3$ $2^4x^8 + 5x^3 = 16x^8 + 5x^3$ Answer: degree = <u>8</u></p>	<p>b) $(5x^4) + 7(+x^4)$ $6x^4 + 7$ Answer: degree = <u>4</u></p>
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13) Solve for the unknown variables (no decimals).

<p>a) $2(-5x) - 2 = 3(-4x) - 89$ $-10x - 2 = -12x - 89$ $-10x + 12x = -89 + 2$ $2x = \frac{-87}{2}$ $x = \frac{87}{2}$</p> <p>Answer: _____</p>	<p>b) $6(-17x - 5x) + 29 = 16 - 14x$ $-102x - 30x + 29 = 16 - 14x$ $-132x + 29 = 16 - 14x$ $-132x + 14x = 16 - 29$ $\frac{-118x}{-118} = \frac{-13}{-118}$ $x = \frac{13}{118}$</p> <p>Answer: _____</p>
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14) Simplify the following algebraic expressions. If the equation is already in simplified form rewrite the statement in the space provided.

a)	$(-7x + 4)(6x + 1)$ $-42x^2 - 7x + 24x + 4$ $-42x^2 + 17x + 4$	b)	$-4x(-2x^2 - 15x - 16)$ $8x^3 + 60x^2 + 64$
c)	$(5x^3 - 8x + 3) - (-2x^3 - 3x + 9)$ $\boxed{5x^3} - \boxed{8x} + 3 + \boxed{2x^3} + \boxed{3x} - 9$ $7x^3 - 5x - 6$	d)	$\boxed{25x} + \boxed{36y} - \boxed{4x^2} + \boxed{15x} - \boxed{7y} + 8$ $-4x^2 + 40x + 29y + 8$
e)	$4(13x - 5) - 8x(x - 7)$ $\boxed{52x} - \boxed{20} - \boxed{8x^2} + \boxed{56x}$ $-8x^2 + 108x - 20$	f)	$\left(\frac{-45x^5}{9x^{-1}}\right)^{-1}$ $(-5x^6)^{-1}$ $-5^{-1}x^{-6}$ $-\frac{1}{5x^6}$

15) Consider the polynomials:

$$A = 9x^2 - 4x - 13$$

$$B = x^2 - 6$$

$$C = -13x - 4$$

Find.

a)	<p>3A - 2B</p> $3(9x^2 - 4x - 13) - 2(x^2 - 6)$ $27x^2 - 12x - 39 - 2x^2 + 12$ $25x^2 - 12x - 27$ <p>Answer: $25x^2 - 12x - 27$</p>
b)	<p>(A)(C)</p> $(9x^2 - 4x - 13)(-13x - 4)$ $-117x^3 - 36x^2 + 52x^2 + 16x + 169x + 52$ $-117x^3 + 16x^2 + 185x + 52$ <p>Answer: $-117x^3 + 16x^2 + 185x + 52$</p>