MPM 1D0

Grade 9 Academic Math
Unit 2 – Review for Test

Name: *Mr. Solutions*

Well done Mr. S.!!

43/43

1. Complete the following table: **6/6**

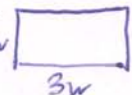| English Phrase or Sentence	Algebraic Expression or Equation
(a) Triple a number reduced by ten $\times 3 \quad -$	$3n - 10$ ✓
(b) Five more than one-fourth of a number. ✓	$5 + \dfrac{n}{4}$
(c) Four less than half a number $-4 \qquad \dfrac{x}{2}$	$\dfrac{x}{2} - 4$ OR $\dfrac{1}{2}x - 4$ ✓
(d) The sum of two consecutive integers is 10001. $+ \quad x, x+1 \quad =$	$x + x + 1 = 1001$ ✓
(e) Twice the distance travelled, increased by 9 is 119. $\times 2 \qquad + \qquad =$	$2d + 9 = 119$ ✓
(f) Triple, five less than a number, increased by 4 is 14	$-3(x-5) + 4 = 14$

Multiple Choice 3/3

For questions 2 to 4, select the best answer. Write the letter of your choice in the provided blank space.

$w + 3w + w + 3w = 36$
$8w = 36 \Rightarrow w = 4.5$

2. ___C___ ✓ The perimeter of a rectangle is 36 m. If the length is three times the width, what is the length?

(a) 4.5 m   (b) 18 m   (c) 13.5 m   (d) 9 m

$3w = 3(4.5) = 13.5$

3. ___a___ ✓ The distance, d, in kilometres, a spaceship travels in t hours is given by the formula $d = 40000t$. How long will it take the spaceship to travel 120000 km?

(a) 3 h   (b) 30 h   (c) 0.3 h   (d) 300 h

$t = \dfrac{d}{40000}$
$= \dfrac{120000}{40000}$

4. ___a___ ✓ Nat and Stefan play on the same hockey team. Nat has scored 8 more goals than Stefan, and together they have 36 goals. How many goals has Stefan scored?

(a) 14   (b) 12   (c) 16   (d) 10

	# goals
Stefan	s
Nat	$s + 8$

$s + s + 8 = 36$
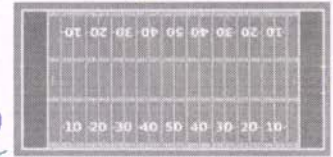$2s + 8 = 36$
$2s = 28$
$s = 14$

5. The *perimeter* of an NFL football field is exactly 1040 feet. If the length of the field is 2.25 *times* longer than the width, find the *dimensions* (i.e. length and width) of the field. (9/9)

2.25w

(a) Construct an algebraic model.

Unknown	Representation
width	w
length	$2.25w$

(b) Translate the problem into an equation.

$w + 2.25w + w + 2.25w = 1040$

W

(c) Solve the equation

$w + 2.25w + w + 2.25w = 1040$

$\therefore 6.5w = 1040$

$\therefore \dfrac{6.5w}{6.5} = \dfrac{1040}{6.5}$

$\therefore w = 160$

$\therefore 2.25w = 2.25(160) = 360$

(d) State a conclusion.

The width of the field is 160 feet and the length is 360 feet.

(e) Check the solution.

$160 + 2.25(160) + 160 + 2.25(160)$

$= 160 + 360 + 160 + 360$

$= 1040$

Eliseo has 5 less than Sachin   Will has 2 more than Sachin

6. Sachin scored 5 goals *more than* Eliseo but 2 goals *less than* Will in a Soccer Tournament. Altogether, the three players scored 27goals. (8/8)

(a) Let s represent goals scored by Sachin. Express Eliseo's and Will's goals in terms of s. **(2 APP)**

Student	Expression Representing # of goals
Sachin	s
Eliseo	$s - 5$ ✓
Will	$s + 2$ ✓

(b) Use the following sentence to write an equation: **(2 APP)**

"Altogether, the three players scored 27 goals in the tournament."

$$s + s - 5 + s + 2 = 27$$
✓ ✓

(c) Now *solve your equation* and *state a conclusion*. **(4 APP)**

$$s + s - 5 + s + 2 = 27$$
$$\therefore 3s - 3 = 27 \checkmark$$
$$\therefore 3s - 3 + 3 = 27 + 3 \checkmark$$
$$\therefore 3s = 30$$
$$\therefore \frac{3s}{3} = \frac{30}{3} \checkmark$$
$$\therefore s = 10$$

Sachin scored 10 goals, Eliseo scored 5 and Will scored 12. ✓

7. Josh is a salesperson at Future Shop in TV department. He is paid $15.25 per hour worked *plus* $50.00 per TV sold. [9 APP in total] (9/9)

(a) Complete the following table by writing an *algebraic expression* for the amount earned in each case. **(3 APP)**

Quantity	Variable Representing Quantity	Amount Earned...
Number of Hours Worked	t	... for working t hours $15.25t$ ✓
Number of TV Sold	n	... for selling n TVs $50n$ ✓
Total Earnings ($)	E	... in total $15.25t + 50n$ ✓

$$E = 15.25t + 50n$$

(b) How much would Josh earn for working for 40 hours and selling 15 TVs? $t = 40, n = 15, E = ?$

$$E = 15.25t + 50n$$
$$= 15.25(40) + 5(15) \checkmark$$
$$= 610 + 75 = 685 \checkmark$$

Josh earns $685 for working 40 hours and selling 15 TVs.

(c) How many TVs must Josh sell to earn $781.25 for 25 hours of work?

$E = 781.25, t = 25, n = ?$

$$781.25 = 15.25(25) + 50n \checkmark$$
$$\therefore 781.25 = 381.25 + 50n \checkmark$$
$$\therefore 781.25 - 381.25 = 381.25 + 50n - 381.25$$
$$\therefore 400 = 50n$$
$$\therefore \frac{50n}{50} = \frac{400}{50}$$
$$\therefore n = 8$$

Josh must sell 8 TVs to earn $781.25 for 25 hours of work.

8. Anmol is saving nickels and dimes in a jar. The jar contains 10 more nickels than dimes and altogether, the value of the coins is $16.25. How many nickels and dimes are in the jar?

Nickel = 5¢ = $0.05

Dime = 10¢ = $0.10

Unknown	Representation	Value
# of dimes	d	0.10d
# of nickels	d+10	0.05(d+10)

Total value of coins = 16.25

∴ Value of dimes + value of nickels = 16.25

∴ $0.10d + 0.05(d+10) = 16.25$

∴ $0.10d + 0.05d + 0.50 = 16.25$

∴ $0.15d + 0.5 = 16.25$

∴ $0.15d + 0.5 - 0.5 = 16.25 - 0.5$

∴ $0.15d = 15.75$

∴ $\dfrac{0.15d}{0.15} = \dfrac{15.75}{0.15}$

∴ $d = 105$

∴ $d + 10 = 115$

There are 105 nickels and 115 dimes in Amnol's jar.

$\dfrac{8}{8}$