Carlingford High School

Mathematics

Year 9, 5.1 Term 3 Test 2019

Name: ANSWERS

Ms Bennett

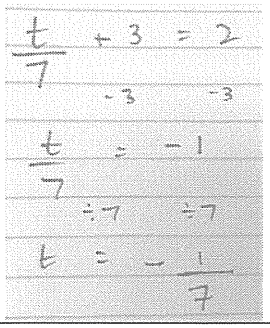
Time allowed: The whole period

- Show all necessary working.
- Answer all questions in the spaces provided.
- Marks may be deducted for careless or untidy work.
- Complete the examination in blue or black pen.
- Calculators may be used
- Study notes may be used

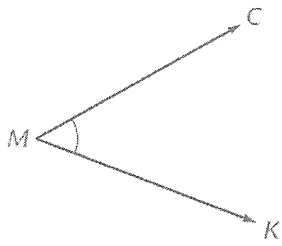
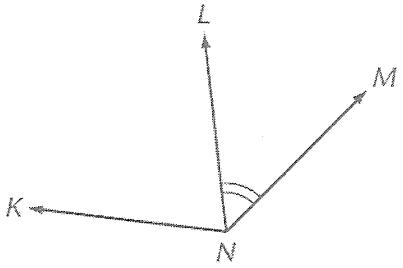
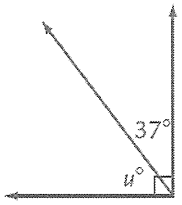
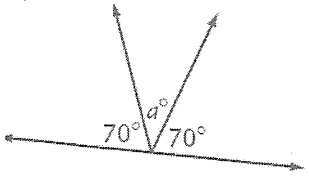
Topic	Solving Equations	Geometry	Total
Mark	/33	/46	/79

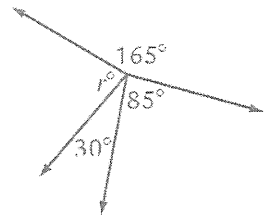
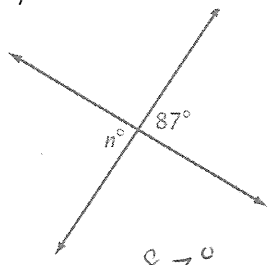
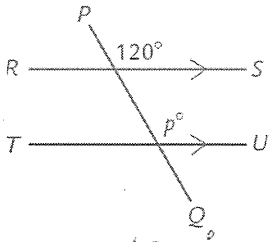
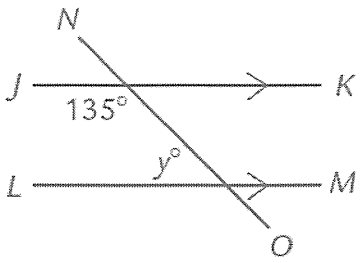
Section 1: Solving Equations

	Solve the following one-step equations:		Marks
1.	$y + 6 = 14$ $-6 \quad -6$ $y = 8$	$\frac{u}{4} = -40$ $\times 4 \quad \times 4$ $u = -160$	2
	$a - 7 = -2$ $+7 \quad +7$ $a = 5$	$15 = 9 + e$ $-9 \quad -9$ $e = 6$	2
	$-3 + m = 2$ $+3 \quad +3$ $m = 5$	$\frac{7g}{7} = \frac{-23}{7}$ $g = -3\frac{2}{7}$	2
	$7 + b = -1$ $-7 \quad -7$ $b = -8$	$-\frac{g}{3} = 6$ $\times -3 \quad \times -3$ $g = -18$	2
	$\frac{8t}{8} = \frac{24}{8}$ $t = 3$	$\frac{-3m}{-3} = \frac{-15}{-3}$ $m = 5$	2
	$h + 11 = -1$ $-11 \quad -11$ $h = -12$	$4 - k = 5$ $-4 \quad -4$ $-k = 1$ $k = -1$	2
	$\frac{u}{2} = -2.5$ $\times 2 \quad \times 2$ $u = -5$	$\frac{28}{7} = \frac{7g}{7}$ $g = 4$	2
2.	Give an example of an algebraic equation: $3a + 2 = 9$ Give an example of an algebraic expression: $5x - 3$ Describe, in words, the difference between an equation and an expression: An equation has an = sign, an expression does not		3
3.	Match up the following **inverse operations** **Operation** — **Inverse Operation** Subtracting — Adding Adding — Subtracting Multiplying — Dividing Dividing — Multiplying Squaring — Squaring Square rooting — Square rooting		6

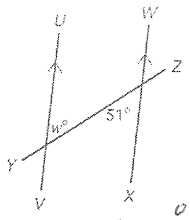
4.	Underneath, you can see a student's working to solve an equation. There is an error in the work. Explain what the error is, and what the student should have done instead:  $\frac{t}{7} + 3 = 2$ $-3 \quad -3$ $\frac{t}{7} = -1$ $\times 7 \quad \times 7$ $t = -\frac{1}{7}$ ← In this line the student divided by 7 but should have multiplied by 7	2
5.	Solve the following two step equations, showing all working:	
	$3x + 2 = 14$ $-2 \quad -2$ $\frac{3x}{3} = \frac{12}{3}$ $x = 4$	2
	$2 + 6m = 20$ $-2 \quad -2$ $\frac{6m}{6} = \frac{18}{6}$ $m = 3$	
	$8y - 5 = 19$ $+5 \quad +5$ $\frac{8y}{8} = \frac{24}{8}$ $y = 3$	2
	$7 - 4p = 31$ $-7 \quad -7$ $\frac{-4p}{-4} = \frac{24}{-4}$ $p = -6$	
	$\frac{(n-2)}{3} = 5 \quad \times 3$ $n - 2 = 15$ $+2 \quad +2$ $n = 17$	2
	$\frac{k}{9} - 8 = 12$ $+8 \quad +8$ $\frac{k}{9} \times 9 = 20 \times 9$ $k = 180$	
6.	Solve, by first expanding the brackets:	
	$5(p + 5) = 4$ $5p + 25 = 4$ $-25 \quad -25$ $\frac{5p}{5} = \frac{-21}{5}$ $p = -4\frac{1}{5}$	2

Section 2: Geometry

1.	 a) Name the angle shown, using 3 letters $\angle CMK$ b) Measure the angle and write down the size in degrees 50°	2
2.	 a) For $< LNM$, Circle the correct classification: acute, straight, obtuse, right, reflex b) Measure $< LNM$ and write down the size in degrees 51°	2
3.	Find the value of the following pronumerals, giving reasons for each: **(See the reason bank on the last page)** a)  $u =$ $90 - 37 = 53^\circ$ Reason: Angles in a right angle b)  $a =$ $180 - (70 + 70) = 40^\circ$ Reason: Angles on a straight line	8

	c)  $r =$ 360 − (165 + 85 + 30) = 80° Reason: Angles at a point d)  $n =$ 87° Reason: vertically opposite angles	
4.	What angle is complementary to 75^0? 15°	1
5.	What angle is supplementary to 18^0? 162°	1
6.	Find the value of the following pronumerals, giving reasons for each: **(See the reason bank on the last page)** a)  $p =$ 120° Reason: corresponding angles on parallel lines b)  $y =$ 180 − 135 = 45° Reason: Co-interior angles on parallel lines	10

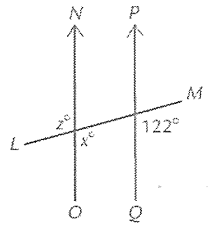
c)



$w =$ 51°

Reason: alternate angles on parallel lines

d)



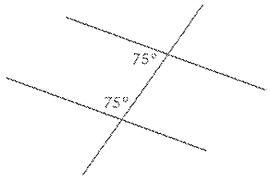
$x =$ 122°

Reason: corresponding angles on parallel lines

$z =$ 122°

Reason: vertically opposite angles

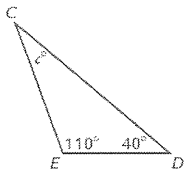
7. Are the following pair of lines parallel? Why/ Why not? (2)



No, co-interior angles should be supplementary

8. Find the value of the following pronumerals, giving reasons for each: **(See the reason bank on the last page)** (8)

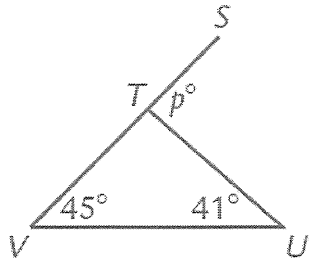
a)



$c =$ 180 − (110 + 40) = 30°

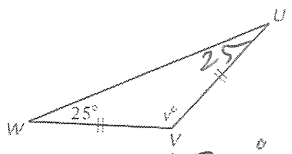
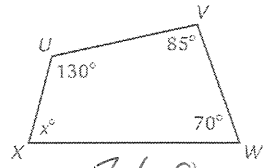
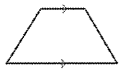
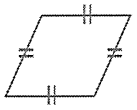
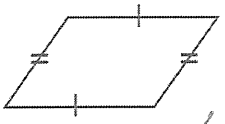
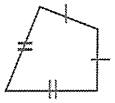
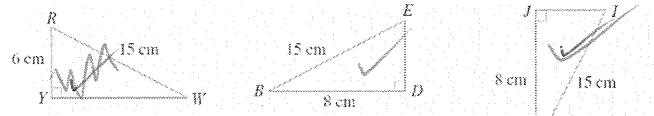
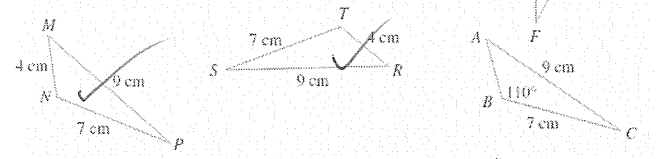
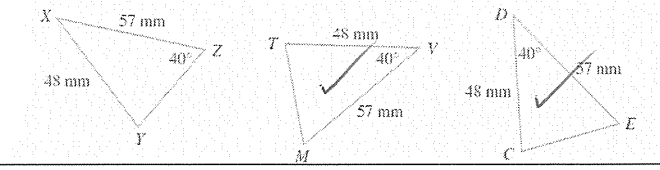
Reason: Angle sum of a triangle

b)



$p =$ 45 + 41 = 86°

Reason: Exterior angle of a triangle

	C)  180 - (25 + 25) $v =$ 130° Reason: Base angles of an isosceles triangle d)  $x =$ 360 - (130 + 85 + 70) = 75° Reason: Angle sum of a quadrilateral	
9.	Classify the following quadrilaterals, from the following: Rhombus, rectangle, parallelogram, square, kite, quadrilateral 1)  Type: trapezium 2)  Type: rhombus 3)  Type: parallelogram 4)  Type: square 5)  Type: kite 6)  Type: rectangle	6
10.	For each set of three triangles, decide **which two** are congruent (tick them) and write down which test you used (SSS, SAS, AAS, RHS)	6
a)	 Test: RHS	
b)	 Test: SSS	
c)	 Test SAS	

Geometry reason bank:

*Angle sum of a triangle

*Angle sum of a quadrilateral

*Angles on a straight line

*Angles in a right angle

*Vertically opposite angles

*Angles at a point

*Corresponding angles on parallel lines

*Co-interior angles on parallel lines

*Alternate angles on parallel lines

*External angle of a triangle

*Base angles of isosceles triangle