SENIOR PHASE

GRADE 9

NOVEMBER 2019

MATHEMATICS
MARKING GUIDELINE

MARKS: 100

IMPORTANT INFORMATION:

This is a marking guideline. In any instance where learners have used different but sound mathematical strategies to solve the problems, they (learners) should be credited.

Key:
M – Method marking
CA – Consistent accuracy marking
A – Accuracy marking

QUESTION 1

Ques.	Solution		Total
1.1	B	1 Mark for each correct answer. (A)	
1.2	A		
1.3	C		
1.4	B		
1.5	C		
1.6	D		
1.7	C		
1.8	C		
1.9	C		
1.10	B		**[10]**

QUESTION 2

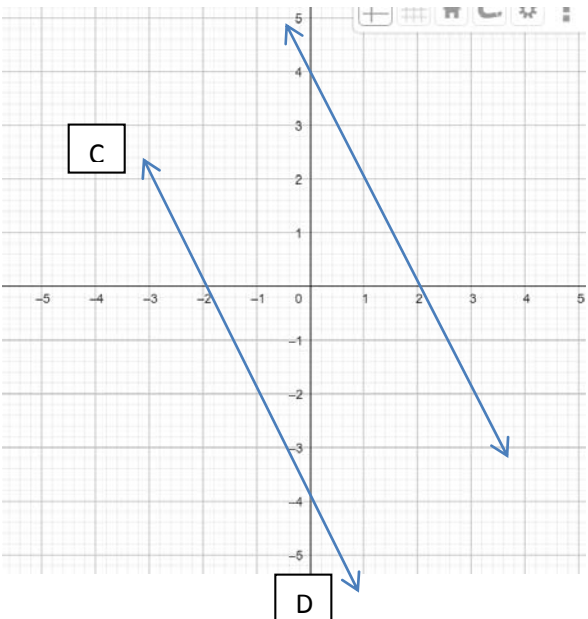| Ques.	Solution		Total
2.1.1	$\dfrac{4p^2q}{pq^3} \div \dfrac{10pq}{p^2q^3}$ $= \dfrac{4p^2q}{pq^3} \times \dfrac{p^2q^3}{10pq}$ $= \dfrac{4p^4q^4}{10p^2q^4}$ $= \dfrac{2p^2}{5}$	Changing sign and fraction: 1 mark (M) Simplifying: 1 mark (M) Answer: 1 mark (CA)	(3)
2.1.2	$\dfrac{3x+6y}{x+2y}$ $= \dfrac{3(x+2y)}{(x+2y)}$ $= 3$	HCF: 1 mark (M) Answer: 1 mark (A)	(2)
2.2.1	$3x(2x^2 - 5x - 4)$ $= 6x^3 - 15x^2 - 12x$	Answer: 2 marks (A)	(2)
2.2.2	$(x + 3)(x - 4)$ $= x^2 - 4x + 3x - 12$ $= x^2 - x - 12$	Multiplication: 1 mark (M) Answer: 1 Mark (CA)	(2)
2.2.3	$(x - 5)^2 - (x + 5)(x - 5) + 10x$ $= x^2 - 10x + 25 - (x^2 - 25) + 10x$ $= x^2 - 10x + 25 - x^2 + 25 + 10x$ $= 50$	$x^2 - 10x + 25$: 1 mark (M) ; $x^2 - 25$: 1 mark (M) $-x^2 + 25$: 1 mark (CA) Answer: 1 mark (CA)	(4)
2.3.1	$3a^2b^3 - 12a^4b$ $= 3a^2b(b^2 - 4a^2)$ $= 3a^2b\,(b + 2a)(b - 2a)$	HCF: 1 mark (M) $(b + 2a)$: 1 mark (A) $(b - 2a)$: 1 mark (A)	(3)
2.3.2	$x^2 - 3x - 10$ $= (x + 2)(x - 5)$	$(x + 2)$: 1 mark (A) $(x - 5)$: 1 mark (A)	(2)

Please turn over

Ques.	Solution		Total
2.3.3	$4x(a - b) + 3(b - a)$ $= 4x(a - b) - 3(a - b)$ $= (a - b)(4x - 3)$	Changing signs: 1 mark (M) HCF: 1 mark (A) $(4x - 3)$: 1 mark (A)	(3)
2.4	$\frac{3x-1}{2} - \frac{2x}{3} = 2$ $3(3x - 1) - 2(2x) = 6(2)$ $9x - 3 - 4x = 12$ $5x = 15$ $x = 3$	Multiplying by 6: 1 mark (A) Solving for x: 1 mark (M) Answer: 1 mark (CA)	(3)
			[24]

QUESTION 3

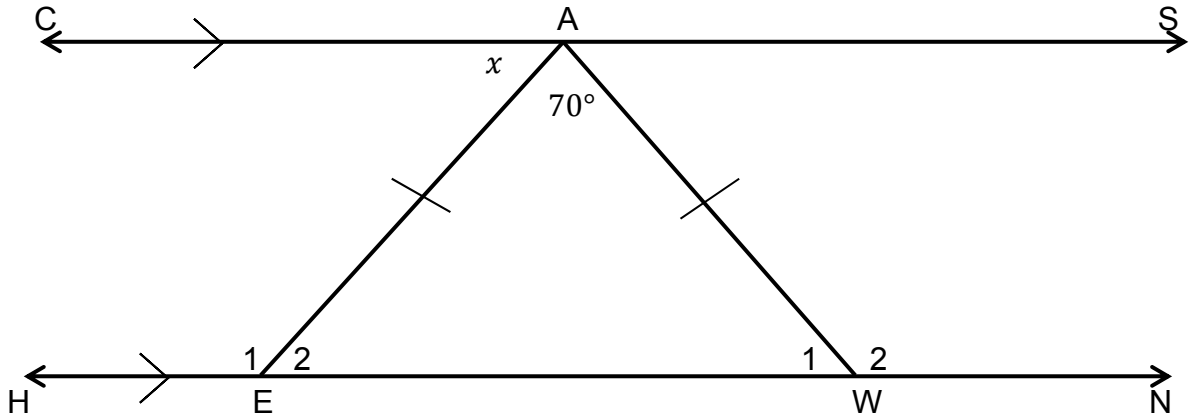| Ques.	Solution		Total
3.1.1	$15\,000 \times \dfrac{15}{100} = R2\,250$	Answer: 1 mark (A)	(1)
3.1.2	$A = P(1 + i.n)$ $A = 12\,750(1 + \frac{10}{100} \times 2)$ $A = R15\,300$	Formula: 1 mark (A) Substitution: 1 mark (M) Answer: 1 mark (CA)	(3)
3.1.3	$15\,300 \div 24 = R637,50$	Dividing by 24: 1 mark (M) Answer: 1 mark (CA)	(2)
3.2	$A = P(1 + i)^n$ $15\,300 = P(1 + \frac{6,5}{100})^5$ $\frac{15\,300}{(1 + \frac{6,5}{100})^5} = P$ $12\,000 = P$	Formula: 1 mark (A) Substitution: 1 mark (M) Answer: 1 mark (CA)	(3)
			[9]

QUESTION 4

Ques.	Solution		Total
4.1	18	Answer: 1 mark (A)	(1)
4.2	Add 5	Answer: 1 mark (A)	(1)
4.3	$Tn = 5n - 2$	5: 1 mark -2: 1 mark	(2)
4.4	$Tn = 5n - 2$ $38 = 5n - 2$ $40 = 5n$ $8 = n$	Substitution: 1 mark (M) Solving for n: 1 mark (M) Answer: 1 mark (CA)	(3)
			[7]

QUESTION 5

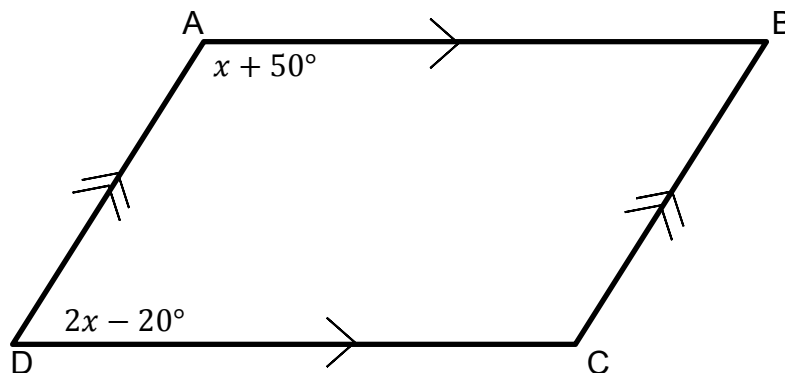| Ques.	Solution		Total
5.1	(3; 3)		(1)
5.2.1		x-intercept: 1 mark y-intercept: 1 mark shape and direction: 1 mark	(3)
5.2.2	Lines AB and CD are parallel. Gradients are equal.	Parallel: 1 mark (A) Gradients equal: 1 mark (A)	(2)
			[6]

QUESTION 6

Ques.	Solution	Total
6.1		
	$x + 75° + 55° = 180° (<' \ s \ on \ a \ str. line)$ $x = 50°$ Statement and reason: 1 mark (A) Answer: 1 mark (CA)	(2)

6.2

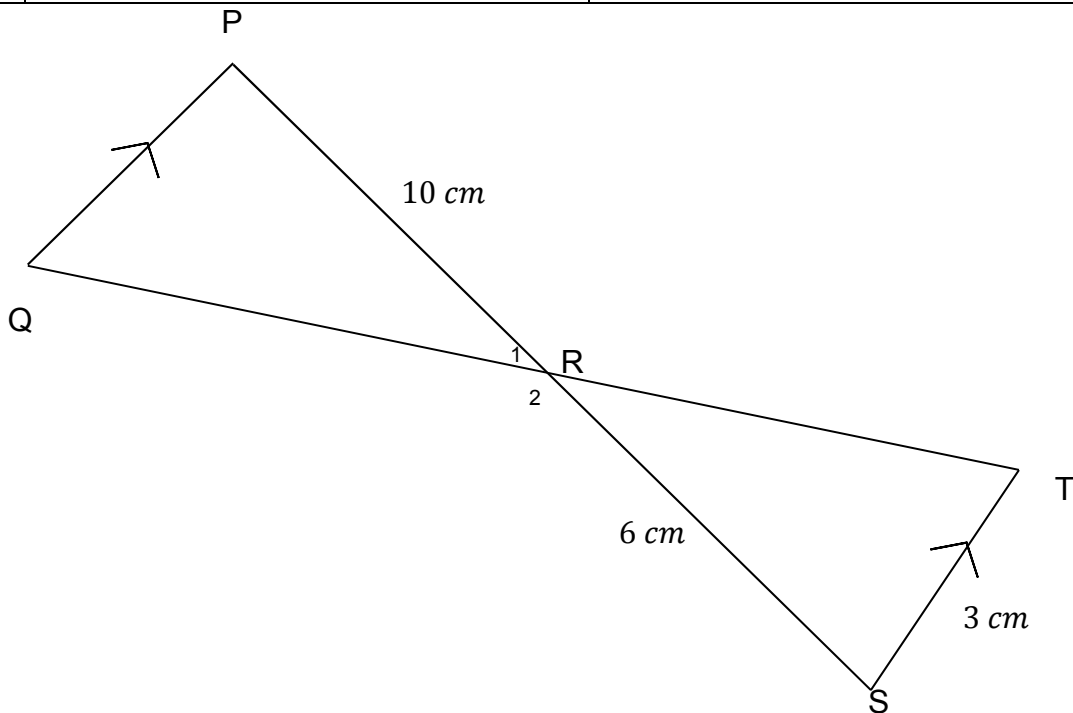| 6.2.1	Alternate angles. $CS\|HN$	Answer: 1 mark	(1)
6.2.2	$\widehat{W}_1 = x \ (<' \ s \ opp; equal \ sides)$ $x + x + 70° = 180° (Sum \ of \ int \ <' \ s)$ $2x = 110°$ $x = 55°$	Answer and reason: 1 mark (A) Statement and reason: 1 mark (M) Answer: 1 mark (CA)	(3)

6.3

6.3	$x + 50° + 2x - 20° = 180°$ $(AB\parallel CD; co-int <'s)$ $3x = 150°$ $x = 50°$ $\hat{B} = \hat{D} = 2x - 20°$ $(opp <'s\ of\ parm)$ $\hat{B} = 2(50) - 20$ $\hat{B} = 80°$	Statement and reason: 1 mark (A) Answer: 1 mark (CA) Statement and reason: 1 mark Answer: 1 mark (CA)	(4)

6.4

6.4.1	In ΔABD and ΔACD
	      $AB = AC$ $(Given)$
	      $BD = CD$ $(Given)$
	      AD is common
	 $\therefore\ \Delta ABD \equiv \Delta ACD\ (S,S,S)$
		Statement and reason: 1 mark (A)
		 Statement and reason: 1 mark (A)
		 Statement and reason: 1 mark (A)
		 Statement and reason: 1 mark (A)
			(4)

6.4.2	$\hat{A}_1 = \hat{A}_2$ $(\Delta ABD \equiv ACD)$ Therefore, DA bisects $B\hat{A}C$.	Statement and reason: 1 mark (A)	(1)

6.5

6.5.1	In ΔPQR and ΔSTR $\hat{P} = \hat{S}$ ($Alt <' s; PQ \parallel ST$) $\hat{Q} = \hat{T}$ ($Alt <' s; PQ \parallel ST$) $\hat{R}_1 = \hat{R}_2$ ($Vert\ opp$) $\therefore \Delta PQR \parallel\parallel \Delta STR$ ($<,<,<$)	Statement and reason: 1 mark Statement and reason: 1 mark Statement and reason: 1 mark Statement and reason: 1 mark	(4)
6.5.2	$\dfrac{PQ}{ST} = \dfrac{PR}{SR} = \dfrac{QR}{TR}$ ($proportional$; $\Delta PQR \parallel\parallel \Delta STR$) $\dfrac{PQ}{3} = \dfrac{10}{6}$ $PQ \times 6 = 3 \times 10$ $PQ = 30 \div 6$ $PQ = 5cm$	Statement and reason: 1 mark (A) Substitution: 1 mark (M) Answer: 1 mark (CA)	(3)
			[22]

QUESTION 7

7.1.1		Reflection about y-axis 1 mark (A) Correct position: 1 mark (A)	(2)
7.2.2	$(x\ ;y\ ) \to (-x\ ;y)$	Answer: 1 mark (A)	(1)
			[3]

QUESTION 8

8.1.1	$AB^2 = AC^2 - BC^2$ (Pythagoras) $AB^2 = 25 - 16$ $AB^2 = 9$ $AB = 3\ cm$	Formula: 1 mark Answer: 1 mark	(2)
8.1.2	ΔABC $A = \dfrac{1}{2}b \times h$ $A = \dfrac{1}{2}4 \times 3$ $A = 6\ cm^2$ Circle $A = \pi r^2$ $A = \pi(2,5)^2$ $A = 6,3\ cm^2$	Formulae: 1 mark (A) Answer: 1 mark (CA) Answer: 1 mark (CA)	(3)
8.1.3	$6,3 - 6 = 0,3cm^2$	Answer: 1 mark (CA)	(1)
8.2	$V = \pi r^2 \times H$ $V = \pi(7)^2 \times 20$ $V = 3\ 077,2\ cm^3$	Formula: 1 mark (A) Substitution: 1 mark (M) Answer: 1 mark (CA)	(3)
			[9]

QUESTION 9

Ques.	Solution		Total
9.1	9A	Answer: 1 mark	(1)
9.2	$\frac{14+21+20}{3}$ =18,3	$\frac{14+21+20}{3}$: 1 mark Answer: 1 mark	(2)
9.3	On average, half of the learners in each class have failed. The teacher will NOT be happy with these results.	Answer: 1 mark Reason: 1 mark Any sound answer regarding the average of the failures can be marked correctly.	(2)
			[5]

QUESTION 10

Ques.	Solution		Total
10.1		Column 1: 1 mark Column 2: 1 mark	(2)
10.2	12	Answer: 1 mark (A)	(1)
10.3	$P(Tail, prime\ number) = \frac{3}{12} = \frac{1}{4}$	$\frac{3}{12}$: 1 mark (A), Answer: 1 mark (CA)	(2)
			[5]
		TOTAL:	**100**