Carlingford High School

Year 9 (5.3) Mathematics

Term 3 Exam
2018

Print your Name: _____

Circle your class:

9MA31 (Ms Hooper, Ms Gamble) **9MA32 (Mr Gong)** **9MA33 (Ms Bennett)**

- Time allowed: ***50 minutes***
- Approved calculators may be used
- Show all necessary working
- Marks may be deducted for untidy setting out
- Marks for questions are indicated

TOPICS	Marks	
Algebraic Techniques	**/20**	
Geometry	**/28**	
Surds	**/18**	
TOTAL	**/66**	%

Algebraic Techniques

1. Fully factorise the following

a). $x^3 - x$ **[2]**

b). $3ab - 6a + bp - 2p$ **[2]**

c). $a(x - y) - 2b(x - y) + 3ab - 6b^2$ **[2]**

2. Fully factorise the following

a). $x^2 + 6x - 27$ **[2]**

b). $a^2 - 3a - 18$ **[2]**

c). $1 - 2x - 24x^2$ **[2]**

3. Fully simplify $\dfrac{3x^2 - 75}{3x^2 - 30x + 75}$ **[2]**

4. Fully simplify the following

a). $\dfrac{x}{2x+6} + \dfrac{5}{x^2 - 9}$ **[2]**

b). $\dfrac{3x-6}{x+3} \times \dfrac{3x+9}{5x-10}$ **[2]**

c). $\dfrac{y}{y^2 + y} \div \dfrac{4}{5y+5}$ **[2]**

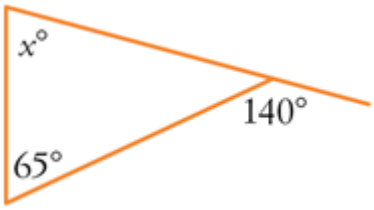
Geometry

1. What is a regular polygon ? **[1]**

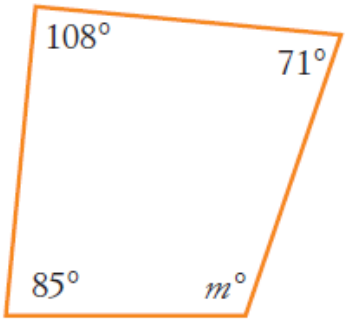
2, Name the quadrilateral(s) whose diagonals are equal and intersect at right angles. **[1]**

3. Find the value of each pronumeral in the diagram below, giving reasons. **[2]**

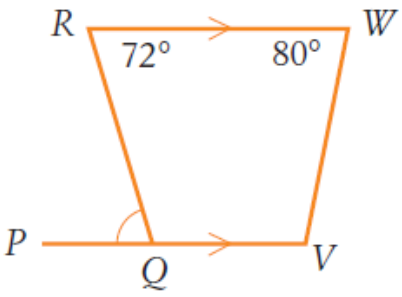
a).



b). **[2]**



4. Find the size of $\angle PQR$, giving reasons. **[2]**

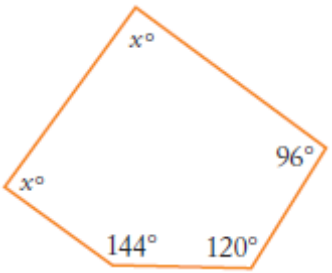


5. How many sides does a dodecagon have ? **[1]**

6. Name this polygon. **[1]**

7. Find the interior angle sum of a decagon. **[2]**

8. Find the value of x. **[2]**



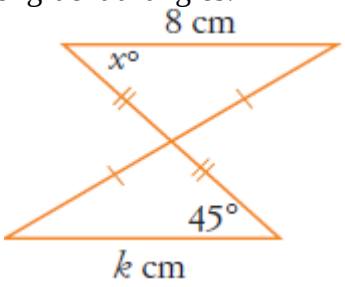
9. For a regular octagon, find the size of:

a). each exterior angle **[1]**

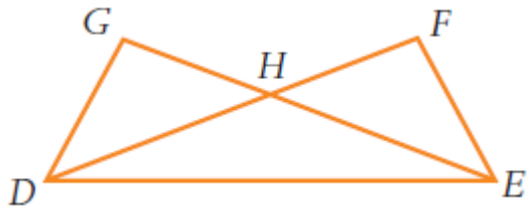
b). each interior angle. **[1]**

Geometry continued

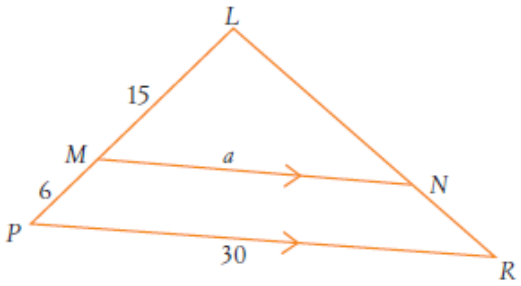
10. Find the value of x^o and k in the pair of congruent triangles. **[2]**



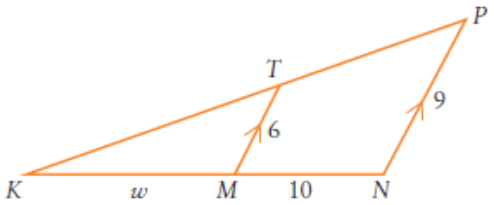
11. If $\angle EDF = \angle DEG$ and $FD = GE$, prove that $\Delta EDF \equiv \Delta DEG$. **[3]**



12. $\Delta LPR \,|||\, \Delta LMN$. Find the value of a correct to 2 decimal places. **[2]**



13. Given the diagram



a). Prove $\Delta KNP \,|||\, \Delta KMT$. **[3]**

b). Hence find the value of w. **[2]**

Surds

1. Circle the surds from this list of square roots: $\sqrt{289}$, $\sqrt{101}$, $\sqrt{121}$, **[1]**

2. Simplify $\left(-6\sqrt{3}\right)^2$ = **[1]**

3. Simplify $\dfrac{\sqrt{288}}{6}$ = **[2]**

4. Simplify $\sqrt{18}-\sqrt{27}+\sqrt{8}$ **[2]**

5. Simplify each expression.

a). $6\sqrt{27}\times 4\sqrt{6}=$ **[2]**

b). $\sqrt{54}\div\sqrt{3}=$ **[2]**

c). $\dfrac{4\sqrt{12}\times 5\sqrt{2}}{10\sqrt{8}}=$ **[2]**

6. Expand and simplify this expression $\left(\sqrt{5}-\sqrt{7}\right)\left(2\sqrt{7}+3\sqrt{5}\right)$ **[2]**

7. Rationalise the denominator of $\dfrac{\sqrt{5}}{2\sqrt{7}}$ **[2]**

8. Rationalise the denominator of $\dfrac{\sqrt{2}-1}{3+\sqrt{2}}$ **[2]**

End of Test