

Teachers:

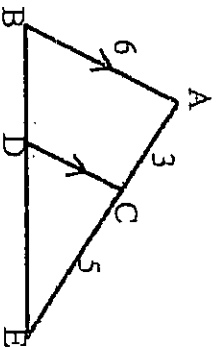
Name: \_\_\_\_\_

- Notes:**
1. Circle your teacher's name.
  2. Non-programmable, non-graphing calculators are permitted.
  3. Your clarity and correctness of written expression will be taken into account in determining the final mark for this examination.
  4. Answer all questions on the exam paper

**MARKS:** Knowledge/Understanding \_\_\_\_\_ /49 Application \_\_\_\_\_ /22 Communication \_\_\_\_\_ /13

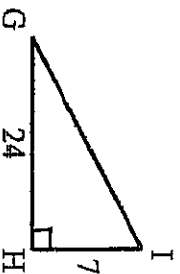
**Part A:** Place the final, simplified answer in the space provided on the right.  
{15 Knowledge/Understanding Marks}

1. Determine the length of CD.



2.  $\triangle ABC \sim \triangle DEF$  with  $\frac{\text{area } \triangle ABC}{\text{area } \triangle DEF} = \frac{25}{81}$ . State the ratio of  $\frac{AB}{DE}$ .

3. For the given triangle, determine each of the following:



4. For the line segment with endpoints A(-5,4) and B(8,2), determine each of the following (to one decimal place where appropriate):

midpoint AB = \_\_\_\_\_  
length of AB = \_\_\_\_\_

5. Write the equation of a circle with centre (0,0) and radius 7 units.

6. For the parabola with equation  $y = -2(x-1)^2 + 5$ , determine the following:

vertex : \_\_\_\_\_  
axis of symmetry : \_\_\_\_\_  
y-intercept : \_\_\_\_\_

7. State the equation of the translated parabola if  $y = x^2$  is translated 3 units left and 2 units down.

8. Factor the following polynomials: a)  $x^2 - 100$

b)  $x^2 - 7x - 18$

a)

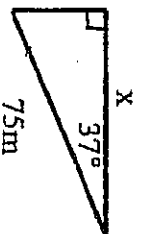
b)

9. State the x-intercepts for the parabola  $y = 2x(x-7)$

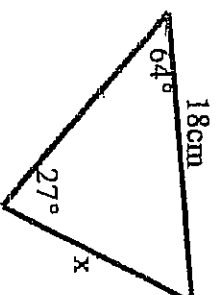
**Part B:** Place complete algebraic solutions in the space provided.

1. Determine the length of  $x$  in each of the following, to the nearest whole number.

a)



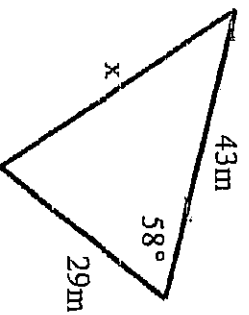
b)



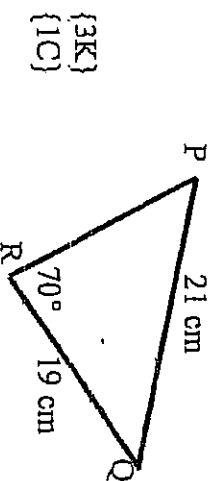
{6K}

{1C}

c)



2. Find  $\angle Q$  to the nearest degree.



{3K}

{1C}

3. Expand and simplify.

a)  $(2m - 5)(4m + 1)$

b)  $3(x - 8)^2$

{3K}

4. Factor the following polynomials.

a)  $7x^2y^3 - 14xy^2 + 28x^3y^2$

b)  $4x^2 - 7x - 2$

{4K}

5. Solve the following quadratic equations to 2 decimal places where appropriate.

a)  $x^2 - 5x - 14 = 0$

b)  $5x^2 - 2x - 1 = 0$

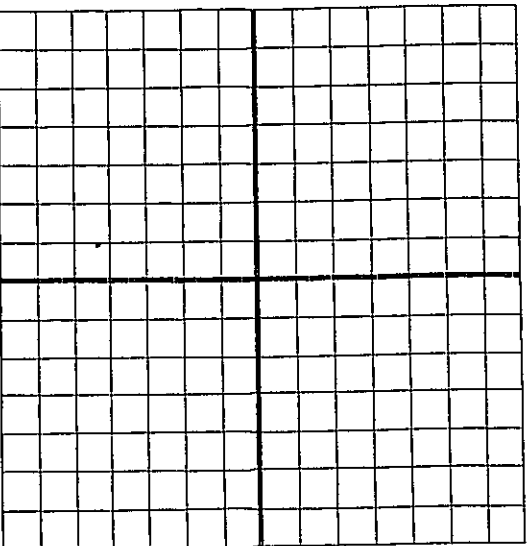
{5K}

6. Determine the point of intersection by graphing:

$$y = \frac{-1}{2}x + 3$$

$$4x - y - 6 = 0$$

{3K}  
{1C}



7. Solve algebraically:  

$$\begin{aligned} 2x - y &= 5 \\ 3x + 2y &= 11 \end{aligned}$$

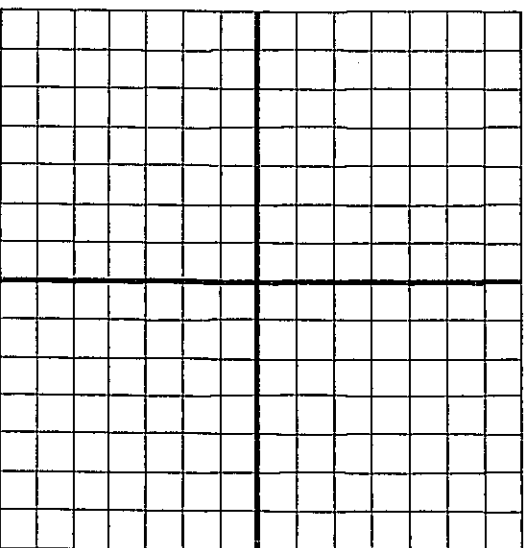
{3K}  
{2C}

8. Graph each of the following:

a)  $y = -2(x-1)^2 + 3$

b)  $y = x^2 + 4x + 6$

{4K}  
{1C}



9. Determine the vertex of  $y = 3x^2 - 18x - 1$  by completing the square.

{3K}

**Part C: Applications** Place complete solutions for each of the following in the space provided.

1. Triangle ABC has vertices  $A(-2,9)$ ,  $B(4,1)$  and  $C(0,-8)$ . Determine the equation of the **perpendicular bisector to side AB**.

{5A}

2. From an apartment window, the angle of depression to a child in a sandbox on the ground is  $12^\circ$ . If the apartment window is at a height of 8.2 m, determine the direct distance from the window to the child to 1 decimal place. (Include a diagram in your solution)

{2A}  
{2C}

3. A triangular garden has side lengths of 5.2 m, 7.4 m and 3.1 m. Determine the smallest angle of the garden to the nearest degree. (Include a diagram in your solution)

{3A}  
{2C}

4. The Paracirc Fair is in town. The admission price for students is \$6 and for adults is \$10. On Monday, 63 people went to the fair and \$470 was made at the admissions gate. How many students and adults attended on Monday?

{4A}  
{1C}

5. A shotput was thrown into the air so that its height,  $h$ , in metres, after  $t$  seconds, is given by

$$h = -3(t - 1)^2 + 5 .$$

- a) From what height was the shotput thrown?

{4A}  
{1C}

- b) What is the maximum height the shotput reaches?

- c) When was this maximum height reached?

6. A rectangular picture has a diagonal of 10 cm. The length is 2 cm more than the width. Determine the width and the length of the picture using an algebraic solution.

{4A}  
{1C}