MPM2DCV1 EXAM REVIEW

CHAPTER 1

1. Solve the following system of equations using the substitution method.

$$x - y = 1$$
$$3x + y = 11$$

2. Solve the following by elimination.

$$6x + 5y = 22$$
$$3y = 4x + 36$$

3. Solve the following system by graphing.

$$3x - 2y = 12$$
$$x - 2y = 8$$

4. Tran had $10000 to invest. She invested part of it in a term deposit paying 4% per annum and the remainder in bonds paying 5% per annum. If the total interest after 1 year was $440, how much did she invest at each rate?

CHAPTER 2

1. Find the length of the line segment joining the following pair of points.
   B (5,-1) and C (-3,4)
2. Determine the shortest distance from the origin to the line $y = 2x - 10$.
3. Find the coordinates of the midpoint of the line segment with endpoints P (2,-7) and Q (-3,5) .
4. Verify that A (4,2) , B (-2,-2) and C (2,8) are the vertices of an isosceles triangle.

CHAPTER 3

1. Fully factor the following.
   a) $3x^2 + 3x - 18$
   b) $x^2 - 2xy - 15y^2$
   c) $10x^2 - 22x + 4$
   d) $8x^2 - 18y^2$
   e) $4x^2 + 20x + 25$

2. Write an equation for the parabola with vertex (1,2) and y-intercept 4.
3. Solve this quadratic equation algebraically (factor method).

$$2m^2 = 3 - 5m$$

CHAPTER 4

1. Express $y = 3x^2 - 12x + 11$ in the form $y = a(x-h)^2 + k$ by completing the square.
2. Solve using the quadratic formula.

   $12x^2 - 40 = 17x$
3. Sketch the following quadratic relation and describe the transformations:

   $y = -2(x-5)^2 - 2$
4. A baseball player throws a ball from the outfield to home plate. The height of the ball, h, in m, at time t, in s is given by the equation:

   $h = -2t^2 + 12t - 7$

   Use the completing the square method to determine:
   a) The maximum height the ball reaches.
   b) The time at which the maximum height is attained.
5. Use the discriminant to determine how many roots each equation has.

   a) $-3x^2 + 5x - 6 = 0$

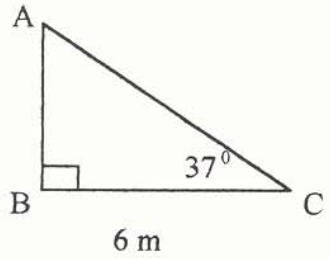
   b) $-2(x-3)^2 + 13 = 0$

CHAPTER 5

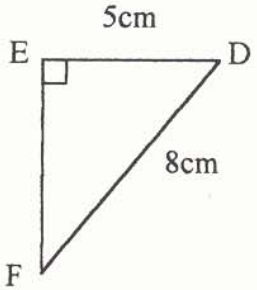
1. Solve each of the following triangles.
   a) In triangle ABC, $\angle B = 90^0$, $\angle A = 47^0$ and b = 15cm.
   b) In triangle DEF, $\angle D = 90^0$, e = 8mm and f = 12mm.

2. Solve each of the following triangles. Round each side length to the nearest tenth and each angle to the nearest degree.

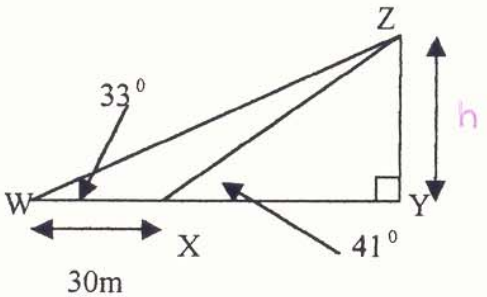
a)



b)



3. Find the length h, to the nearest tenth of a metre.

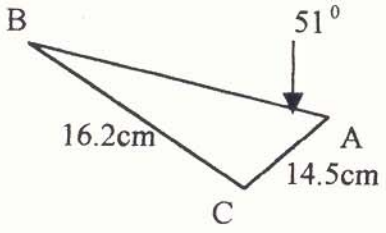


4. A flagpole casts a shadow of 28m when the sun's rays make an angle of 25^0 with the ground. How tall is the flagpole to the nearest metre?

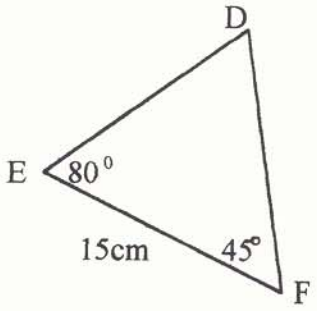
CHAPTER 6

1. Solve each of the following triangles. Round side lengths to the nearest tenth and angles to the nearest degree.

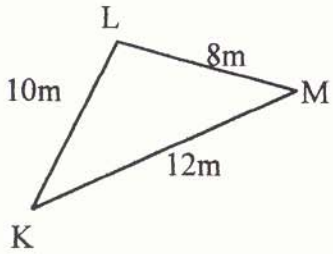
a)



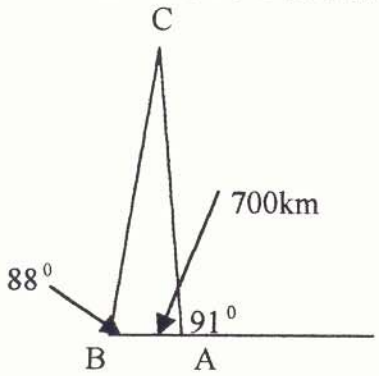
b)



c)



2. In relation to two receiving towers, A and B, a communications satellite, C, is located as shown. How far is the satellite from the tower A, to the nearest kilometre?



ANSWERS

CH 1

1. (3,2)
2. (-3,8)
3. (2,-3)
4. $6000 AT 4% AND $4000 AT 5%.

CH 2

1. 9.4
2. 4.5
3. $-\frac{1}{2}, -1$
4. AB = 7.21, BC = 7.21 and AC = 10.2

CH 3

1. a) $3(x+3)(x-2)$
   b) $(x-5y)(x+3y)$
   c) $2(x-2)(5x-1)$
   d) $2(2x+3y)(2x-3y)$
   e) $(2x+5)^2$
2. $y=2(x-2)^2+2$
3. $m=\frac{1}{2},-3$

CH 4

1. $y=3(x-2)^2-1$
2. $\frac{8}{3},-\frac{5}{4}$

3.a) 4.25m
   b) 5m
   c) 2m

4.a) 11m
   b) 3s

5.a) 0 roots
   b) 2 roots

CH 5

1. a) $\angle C = 43^0$, a = 11.0 cm, c = 10.2 cm
   b) $\angle E = 34^0$, $\angle F = 56^0$ and d + 14.4 mm

2. a) $\angle A = 53^0$, b = 7.5m and c = 4.5m
   b) d = 6.2m, $\angle D = 51^0$ and $\angle F = 39^0$

3. 77.0m
4. 13m

CH 6

1. a) $\angle B = 44^0$, $\angle C = 85^0$, c = 20.8 cm
   b) $\angle D = 55^0$, c = 18.0 cm, f = 12.9 cm
   c) $\angle K = 41^0$, $\angle L = 83^0$, $\angle M = 56^0$
2. 13367 km.