a) Solve: $\sqrt{x+2} = 5$

b) Solve: $x^3 - 7 = 20$

c) Solve: $4(x - 2) < 6(x + 4)$

d) Write k in terms of x: $\frac{8x^3}{k} = 2x$

e) The parabola $y = x^2 - 12x + 20$ has what as its minimum y value?

f) Bill sat two tests and scored an average of 16. If he doubled his score in the second test his average would have gone up to 19.5. What did he score in the first test?

3 Solve for x:

a $(x+1)^2 = 2x^2 - 5x + 11$ **b** $(x+2)(1-x) = -4$

c $5 - 4x^2 = 3(2x+1) + 2$ **d** $x + \frac{2}{x} = 3$

e $2x - \frac{1}{x} = -1$ **f** $\frac{x+3}{1-x} = -\frac{9}{x}$

2 Solve the following using factorisation:

a $9x^2 - 12x + 4 = 0$ **b** $2x^2 - 13x - 7 = 0$ **c** $3x^2 = 16x + 12$

d $3x^2 + 5x = 2$ **e** $2x^2 + 3 = 5x$ **f** $3x^2 = 4x + 4$

1 Fully factorise:

a $3x^2 + 9x$ **b** $2x^2 + 7x$ **c** $4x^2 - 10x$

d $6x^2 - 15x$ **e** $9x^2 - 25$ **f** $16x^2 - 1$

g $2x^2 - 8$ **h** $3x^2 - 9$ **i** $4x^2 - 20$

j $x^2 - 8x + 16$ **k** $x^2 - 10x + 25$ **l** $2x^2 - 8x + 8$

m $16x^2 + 40x + 25$ **n** $9x^2 + 12x + 4$ **o** $x^2 - 22x + 121$

Q3. a) Simplify: $10x.2y^2 \div 5x^2y$

b) Expand: $(3 - x)(4 - x)$

c) Simplify to one fraction: $\frac{3}{x} + \frac{1}{2x}$

d) Make k the subject: $y = (k - 2)^2$

e) Steve is two years older than Bill. If their ages multiplied is 440, how old is Steve?

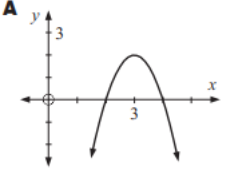
Match each quadratic function with its corresponding graph:

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

d $y = -1(x-1)^2 + 1$ **e** $y = (x-2)^2 - 2$ **f** $y = \frac{1}{3}(x+3)^2 - 3$

g $y = -x^2$ **h** $y = -\frac{1}{2}(x-1)^2 + 1$ **i** $y = 2(x+2)^2 - 1$

A



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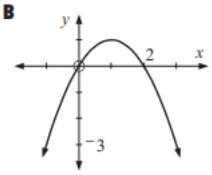

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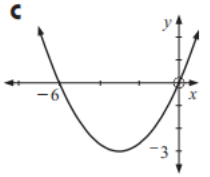

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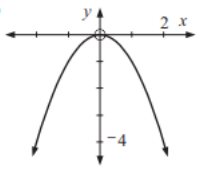

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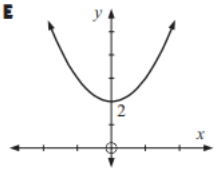

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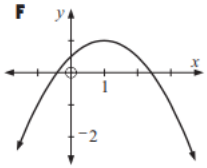

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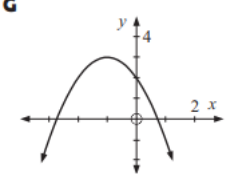

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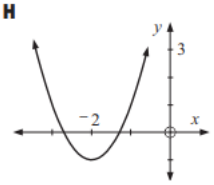

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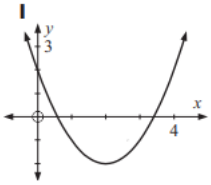

a) Factorise: $6x^2y - 3xy$

b) Solve: $2^x = 16$

c) Simplify fully: $\dfrac{x+5}{x^2+3x-10}$

d) Solve: $9x = x^2 - 22$

e) Solve: $\dfrac{1}{5} + \dfrac{x}{3} = \dfrac{x}{4}$

Q2. a) Solve: $x + 8 = 3 - x$

b) Expand and simplify: $4(x + 3) - 7(x - 2)$

c) Solve: $4x - 7 < 9x + 4$

d) Solve: $\dfrac{x+1}{x+3} = 5$

e) Solve the simultaneous equations: $y = 2x - 8$ and $y = 2 - 6x$

f) Find two numbers ten apart, so the one divided by the other is equal to one-fifth.

Q3. a) Factorise fully: $x^2 - 12x + 35$

b) Solve: $(x + 3)(x - 2) = 0$

c) Simplify fully: $\dfrac{x^2+3x-10}{x^2+7x+10}$

d) Solve: $x^2 = 5x + 50$

e) What is the lowest possible value of y if $y = x^2 + 4x - 32$?

f) A rectangle has one side 6 cm longer than the other.
If the area (in cm^2) is twice its perimeter (in cm), how long is the longer side?

1 Solve the following using 'factorisation':

a $4x^2 + 7x = 0$ **b** $6x^2 + 2x = 0$ **c** $3x^2 - 7x = 0$

d $2x^2 - 11x = 0$ **e** $3x^2 = 8x$ **f** $9x = 6x^2$