Q1. A rectangle is three times as long as it is broad. If it is x cm long, find its perimeter and area in terms of x.

Q2. A car travels at x km/h for 14 km, then increases speed by 8 km/h and travels for a further 6 km. How long did the car travel? (answer in terms of x)

Q3. A boy sits for 15 maths exams during the year and gains an average of $Y\%$. He sits for one more exam and receives a score of 65%. What is his new average?

Q4. A car bought for $\$M$ was sold at a profit of 13%. What was the selling price?

Q5. I bought 'p' books for $\$X$ each and 'q' magazines for $\$Y$ each. How much did I spend?

Q6. H girls play hockey, N girls play netball and B girls play both.

(a) How many girls play hockey but not netball?

(b) How many girls play netball but not hockey?

Q7. An exam is taken by 'g' girls and 'b' boys. The boys score an average of 'm' and the girls score an average of 'n'. Find the average for the whole exam.

Q8. A group of 15 people have $\$A$ between them. A sixteenth person joins them and brings with him \$90. What is the average wealth of each person?

Q9. Harry receives $\$(2P + 1)$ pocket money. On each consecutive birthday this amount is doubled. How much will he be receiving five birthdays from now?

Q10. At a concert, seated tickets cost $\$A$ and standing tickets cost $\$B$. The seated tickets are three times the price of a standing ticket. If 100 seated tickets are sold, and 200 standing tickets, and the total receipts from the concert is $\$Y$, write an expression to find the price of a standing ticket.

Q11. Expand and simplify:

(a) $(x + 1)^2 + (x + 2)^2 + (x + 3)^2$

(b) $(4x + 1)(3x - 1) + (x + 2)^2 - (x + 3)(x - 3)$

(c) $6(m - 6) - 8(m - 4)^2 + 4(m + 4)^2$

(d) $(2x + 1)(2x - 1) + (5x + 3)(5x - 3) - (3x + 4)(3x - 4)$

(e) $(3x^2 - 5)^2 - (2x^2 + 6)^2$

(f) $x(4x + 3)^2 + x(6x - 5)^2 + 10$

Level 5 — Algebra (ANSWERS)

Q1. $P = \frac{8x}{3}$; $A = \frac{x^2}{3}$

Q2. $\frac{14}{x} + \frac{6}{x+8}$ hours

Q3. $\frac{15y+65}{16}$

Q4. SP = \$1.13 M

Q5. $\$(px + qy)$

Q6. (a) H – B (b) N – B

Q7. Av. $= \frac{gn + bm}{g + b}$

Q8. $\$\left(\frac{A+90}{16}\right)$

Q9. $\$(64p + 32)$

Q10. $B = \$\left(\frac{y}{500}\right)$

Q11. (a) $3x^2 + 12x + 14$ (b) $12x^2 + 3x + 12$ (c) $2m^2 + 24m + 152$
(d) $20x^2 + 6$ (e) $5x^4 - 54x^2 - 11$ (f) $52x^3 - 36x^2 + 34x + 10$