



Additional Math with Ali Hashir

## The Binomial Theorem

Worksheet 2 — Answers

**Q1.** (a)  $16 + 32x + 24x^2 + 8x^3 + x^4$ . (b)  $64 - 576x + 2160x^2 - 4320x^3$ .

**Q2.**  $1024 + 640x + 160x^2 + 20x^3$ .

**Q3.**  $729 - 486x + 135x^2 - 20x^3$ ;  $(2.99)^6 \approx 714.5410$ .

**Q4.** (a)  $1512x^5$ . (b)  $-5376x^6$ . (c)  $5670x^4y^4$ . (d)  $-8064$  (the middle term is the constant term).

**Q5.**  $a = 4$ ,  $b = 108$ .

**Q6.** Term in  $x^3$  is  $4032x^3$ ; constant term is  $5376$ .

**Q7.** (a)  $5670x^8$ . (b)  $-17496$ . (c)  $20412$ .

**Q8.**  $(3 - 2x)^5 = 243 - 810x + 1080x^2 - 720x^3 + \dots$ ;  $a = 2$ ; coefficient of  $x^3$  is  $-180$ .

**Q9.**  $\frac{a}{b} = \frac{5}{12}$ .

**Q10.**  $(2+x)^6 = 64 + 192x + 240x^2 + \dots$ ;  $(3-x)^6 = 729 - 1458x + 1215x^2 - \dots$ ;  $(6+x-x^2)^6 = 46656 + 46656x - 27216x^2 + \dots$

**Challenge 1.** (a)  $n = 14$ . (b) Shown (see solutions).

**Challenge 2.** (a) Shown (see solutions). (b)  $x = \pm\sqrt{2}$ .

Full worked solutions available separately.



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