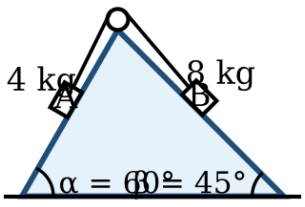
| Day 168 | A Level Maths: A Tier 10-a-day |
|---|---|
| **1** P(A) = 0.6, P(B) = 0.25 and P(A ∩ B) = 0.2.<br>Find<br>(a) P(A ∪ B)<br>(b) P(A′ ∩ B′)<br>(c) P(A \| B) | |
| **2** $f(x) = x^2 + 1$ and $g(x) = 3x - 1$.<br>Solve fg(x) = gf(x). | |
| **3** A group of 6 boys and 8 girls. A team of 3 is chosen at random.<br>Find the probability that the team contains at least one of the girls. | |
| **4** $f(x) = 2x^3 + ax^2 + bx - 16$, where a and b are constants.<br>(x + 4) is a factor of f(x). The remainder when f(x) is divided by (x + 3) is 8.<br>(a) Find a and b. (b) Solve f(x) = 0. | |
| **5** The points A, B and C have coordinates (−1, 0, 1), (−2, 0, −1) and (4, 1, 4).<br>Find angle ABC, in degrees to 1 d.p. | |

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|---|---|
| **6** Find the sum of all the multiples of 4 that lie strictly between 54 and 419. | |
| **7** Solve $4\text{cosec}^2 x + 10\cot x - 10 = 0$ for $0° < x < 360°$. Give answers to 1 d.p. | |
| **8** A 8 kg block is released from rest on a rough plane inclined at $\alpha$, $\tan\alpha = \frac{3}{4}$, $\mu = 0.3$, and slides 5 m down a line of greatest slope. Use work and energy to find (a) the work done against friction, (b) its speed after 5 m. Take $g = 10$. | |
| **9** The system is released from rest. Find (a) the magnitude of the acceleration and which particle moves down, (b) the tension. Take $g = 9.8$. Give answers to 3 s.f. if not exact.   | |
| **10** A drink at 92°C is left in a room at 22°C. Its temperature $\theta$ °C satisfies $\frac{d\theta}{dt} = -k(\theta - 22)$. After 5 minutes the temperature is 67°C. Find k, then the time for it to reach 32°C, to 3 s.f. | |