

End-of-year maths quiz for A Level Maths: answers

A Level Math Revision · A Level Maths (Year 12 and Year 13) · Teacher answers and notes

No calculator needed.

Teacher notes

- How to run it: teams of three or four with a mini whiteboard. Read each question out (or use 'Play it on the projector' above for a Jeopardy board with team scores). Questions get harder through each round: 1 point for question 1 up to 5 points for question 5, or use the board's 100 to 500.
- Tie-break: every team writes one estimate; the closest wins.

Starter

1. **42**

- $6 \times 7 = 42$

2. **9**

- $9 \times 9 = 81$

Round 1: Algebra

a. **$5\sqrt{2}$**

- $\sqrt{25} \times \sqrt{2}$

b. **$x = 2$**

- $2x = 4$

c. **2**

- $f(1) = 1 + 2 - 1$

d. **49**

- $9 + 40$

e. **$x = -2$ or $x = 8$**

- $x - 3 = \pm 5$

Round 2: Coordinate geometry

a. **$-3/2$**

- $y = -3x/2 + 3$

b. **Centre (2, -1), radius 5**

- Compare with $(x - a)^2 + (y - b)^2 = r^2$

c. **(4, 1)**

- $(8/2, 2/2)$

d. **$-1/4$**

- The negative reciprocal of 4

e. **4**

- $y - 3 = -\frac{1}{2}(x - 2)$
- $y = -\frac{1}{2}x + 4$

Round 3: Trigonometry

- a. **$\frac{1}{2}$**
 - Standard value
- b. **$\frac{3\pi}{4}$**
 - $135 \times \pi/180$
- c. **45° and 225°**
 - $\tan$ has period 180° .
- d. **$\sqrt{3}/2$**
 - Standard value
- e. **12 cm^2**
 - $\frac{1}{2} \times 16 \times 1.5 = 12$

Round 4: Calculus

- a. **$15x^2$**
 - Power rule
- b. **$x^4 + c$**
 - Reverse the power rule.
- c. **4**
 - $2x - 8 = 0$
- d. **8**
 - $9 - 1$
- e. **$3e^{3x}$**
 - Chain rule

Round 5: Statistics

- a. **6**
 - $np = 6$
- b. **5**
 - $20 \div 4$
- c. **0.2**
 - 0.4×0.5
- d. **0.5**
 - The curve is symmetric about 0.
- e. **$\frac{1}{16}$**
 - 0.5^4

Extension

- 1. **604 800**
 - $60 \times 60 \times 24 \times 7 = 604\,800$

Every question is original and every answer was recomputed by computer before publishing.