



AQA Qualifications

AQA Level 2 Certificate

FURTHER MATHEMATICS

Level 2 (8360)

Mark Scheme

Worksheet 7

Inequalities

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Glossary for Mark Schemes

These examinations are marked in such a way as to award positive achievement wherever possible. Thus, for these papers, marks are awarded under various categories.

- M** Method marks are awarded for a correct method which could lead to a correct answer.
- A** Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
- B** Marks awarded independent of method.
- M Dep** A method mark dependent on a previous method mark being awarded.
- B Dep** A mark that can only be awarded if a previous independent mark has been awarded.
- ft** Follow through marks. Marks awarded following a mistake in an earlier step.
- SC** Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
- oe** Or equivalent. Accept answers that are equivalent.
eg, accept 0.5 as well as $\frac{1}{2}$

7 Inequalities

| Question | Answer | Mark | Comments |
|----------|---|------|---|
| 1 | $-2 < x \leq 2$ | M1 | A1 3 correct with none incorrect or 4 correct with one incorrect |
| | -1 0 1 2 | A2 | |
| 2 | $6x + 2x > 24$ | M1 | oe |
| | $x > 3$ | A1 | |
| 3 | $8x - 4 < 2$ | M1 | oe |
| | $8x < 2 + 4$ | M1 | $2x - 1 < \frac{2}{4}$ oe oe |
| | $x < \frac{3}{4}$ | A1 | $2x < \frac{2}{4} + 1$ oe |
| 4 | $4(2y + 6) > 2y + 10 + 2y + 10 + y + 4 + y + 4$ | M2 | oe eg, $8y + 24 > 6y + 28$ |
| | $8y - 6y > 28 - 24$ | M1 | M1 $4(2y + 6)$ or $2y + 10 + 2y + 10 + y + 4 + y + 4$ |
| | $y > 2$ or $k = 2$ | A1 | oe |
| 5 | Always Never Sometimes Sometimes | B4 | B1 For each correct part |

| Question | Answer | Mark | Comments |
|-----------------|---|------|--|
| 6(a) | (4, 0) | B1 | SC1 4 and -4 seen |
| | (-4, 0) | B1 | |
| 6(b) | $-4 \leq x \leq 4$ | B2ft | ft Their 4 and their -4 B1ft $-4 < x < 4$ |
| Alt 6(b) | $(4 + x)(4 - x)$ and -4 and 4 | M1 | |
| | $-4 \leq x \leq 4$ | A1 | |
| 7(a) | $x(x + 3)$ | B1 | |
| 7(b) | U-shaped parabola | M1 | ft Their factors in (a) |
| | 0 and -3 labelled on x -axis | A1ft | |
| 7(c) | $x < -3$ and $x > 0$ | B2ft | ft Their factors in (a) B1ft $x \leq -3$ and $x \geq 0$ |
| 8 | 5 and -2 | B1 | Sign diagram using their 5 and their -2 |
| | Sketch of graph $y = (x - 5)(x + 2)$ | M1 | |
| | $x < -2$ and $x > 5$ | A1 | |
| 9 | $(x + 6)(x - 2)$ | M1 | $(x + a)(x + b)$ where $ab = \pm 12$ or $a + b = \pm 4$ |
| | -6 and 2 | A1 | |
| | Sketch of graph $y = (x + 6)(x - 2)$ | M1 | Sign diagram using their -6 and their 2 |
| | $-6 < x < 2$ | A1 | |

| Question | Answer | Mark | Comments |
|-----------|--|------|---|
| 10 | $(2x - 3)(x + 1)$ | M1 | $(2x + a)(x + b)$ where $ab = \pm 3$ or $a + 2b = \pm 1$ |
| | $\frac{3}{2}$ and -1 | A1 | oe |
| | Sketch of graph $y = (2x - 3)(x + 1)$ | M1 | Sign diagram using their $\frac{3}{2}$ and their -1 |
| | $-1 < x < \frac{3}{2}$ | A1 | |
| 11 | $(3x - 2)(x - 4)$ | M1 | $(3x + a)(x + b)$ where $ab = \pm 8$ or $a + 3b = \pm 14$ |
| | $\frac{2}{3}$ and 4 | A1 | |
| | Sketch of graph $y = (3x - 2)(x - 4)$ | M1 | Sign diagram using their $\frac{2}{3}$ and their 4 |
| | $x < \frac{2}{3}$ and $x > 4$ | A1 | |
| 12 | $n^2 > \frac{1}{2}(4n - 8)n$ | M1 | oe |
| | $0 > n^2 - 4n$ | A1 | |
| | $n(n - 4)$ | M1 | Factorises their quadratic expression |
| | Sketch of graph of $y = n(n - 4)$ | M1 | Sign diagram using their 0 and their 4 |
| | $0 < n < 4$ | A1 | |