# Math Class worksheet

Math Class · Maths · AQA

Name | Class | Date

This practice worksheet targets key revision areas from your recent assessment, focusing on circle geometry, algebraic quadratics, exact values, standard form, and proportion.

**Explainer**

This part shows the method. Use it to get started, then try the questions.

## Geometry and measures > Properties and constructions

7 Marks Dropped 2 Sep

### Properties of Chords and Exact Trigonometric Values

1. A chord is any straight line segment connecting two points on the circumference of a circle.
2. Because the two points can be chosen arbitrarily close together or opposite each other (forming a diameter of length $2r$), the length of a chord can be shorter than, equal to, or longer than the radius $r$.
3. Recall exact trigonometric ratios: $\sin(0°) = 0$, $\sin(30°) = \frac{1}{2}$, $\sin(45°) = \frac{\sqrt{2}}{2}$, $\sin(60°) = \frac{\sqrt{3}}{2}$, and $\sin(90°) = 1$.

## Algebra > Sequences

A23 19 Marks Dropped 2 Sep

### Generating Terms and Identifying Rules in Sequences

1. Identify whether a sequence is arithmetic (constant difference) or geometric (constant multiplier).
2. For the sequence $23, 17, 11, 5, \ldots$, calculate the term-to-term rule: $17 - 23 = -6$.
3. Apply the rule to find the next term: $5 - 6 = -1$.

## Probability > Theoretical probability

1 Mark Dropped 2 Sep

### Writing Probabilities Correctly on the 0 to 1 Scale

1. Probability must be expressed as a fraction, decimal, or percentage on a scale from $0$ to $1$, never as odds or a ratio like $a : b$.
2. Count the total number of equally likely outcomes, $n$, and the number of favourable outcomes, $m$.
3. Calculate $P(\text{event}) = \frac{m}{n}$. For 1 disc greater than 6 out of 5 discs, the probability is $\frac{1}{5}$ (or $0.2$).

## Number > Structure and calculation

N2 27 Marks Dropped 2 Sep

### Calculating with Standard Form and Reciprocals

1. To find the greatest value of $y = \frac{1}{x}$, choose the smallest positive value of $x$, because dividing $1$ by a smaller positive fraction gives a larger reciprocal (e.g. $\frac{1}{1/4} = 4$).
2. When dividing numbers into standard form, such as $0.8 \div 100$: evaluate the division first to get $0.008$.
3. Write in standard form $A \times 10^n$ where $1 \leq A < 10$: $0.008 = 8 \times 10^{-3}$.

## Ratio, proportion and rates of change > Direct and inverse proportion

R10 7 Marks Dropped 2 Sep

### Solving Problems Involving Inverse Proportion

1. For inverse proportion, such as time $t$ and number of workers $w$, the formula is $t = \frac{k}{w}$, which means $t \times w = k$ (a constant product).
2. If $t = \frac{600}{w}$ and $t = 15$, substitute: $15 = \frac{600}{w} \implies w = \frac{600}{15} = 40$.
3. If the time allowed decreases ($t < 15$), the number of workers $w$ must increase.

## Statistics > Averages and spread

S2

### Interpreting Statistical Measures: Mean and Range

1. The mean measures the average value/central tendency of a distribution; a higher mean indicates higher values on average.
2. The range ($\text{maximum} - \text{minimum}$) measures the spread or consistency of the data; a larger range indicates a greater spread.
3. Neither the mean nor the range gives the total number of individuals in a data set without additional frequency information.

QUESTIONS

## Geometry and measures › Properties and constructions

7 Marks Dropped 2 Sep

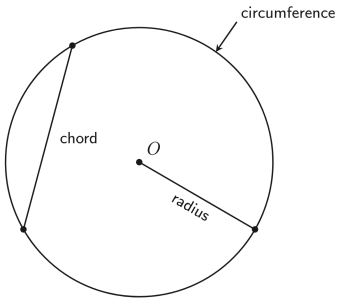
**1** **Complete** Fill in the blanks **[3]**

Complete the statements about geometric and numerical properties.

A chord drawn on a circle connects two points on the circumference. The length of a chord could be _____ the radius of the circle.

The exact value of $\sin 90^\circ$ is _____.

For the equation $y = \frac{1}{x}$, the greatest value of $y$ occurs when $x$ has the _____ positive value.




| | | | | |
|---|---|---|---|---|
| $1$ | $0$ | $\frac{1}{2}$ | shorter than, equal to, or longer than | |
| strictly greater than | smallest | largest | | |

## Probability › Theoretical probability

1 Mark Dropped 2 Sep

**2** **Complete** Fill in the blanks **[3]**

A bag contains $8$ counters numbered $1, 2, 3, 4, 5, 6, 7, 8$.

One counter is picked at random.

The number of counters with a number greater than $5$ is _____.

Written as a fraction in simplest form, the probability of picking a number greater than $5$ is _____.

Written in standard form, $0.0045$ is equal to $4.5 \times 10^{\text{—}}$.

## Number > Structure and calculation

N2 27 Marks Dropped 2 Sep

**3** **Work out** Your turn **[4]**

Work out each calculation. Give your answers in standard form.

(a) $0.4 \div 100$

(b) $50 \times 60 \times 10^4$

## Ratio, proportion and rates of change > Direct and inverse proportion

R10 7 Marks Dropped 2 Sep

**4** **Work out** Your turn **[3]**

The time, $T$ days, taken to build a wall is inversely proportional to the number of bricklayers, $w$, working on it.

The formula is:

$T = \frac{120}{w}$

(a) Work out the number of days taken if $8$ bricklayers are used.

(b) In fact, the project manager needs the wall completed in fewer than $15$ days.

What does this mean about the number of bricklayers needed? Tick one box.

[ ] Fewer than $8$ bricklayers

[ ] Exactly $8$ bricklayers

[ ] More than $8$ bricklayers

Explain your choice.

## Algebra > Notation, vocabulary and manipulation

A23 19 Marks Dropped 2 Sep

**5 Calculate** Your turn **[4]**

Work out the value of each expression following the priority of operations.

(a) Evaluate $3(b^2 + 4b)$ when $b = 5$.

(b) Work out $\frac{7}{18} + \frac{1}{6} \div \frac{1}{3}$. Give your answer as a simplified fraction.

## Geometry and measures > Notation, vocabulary and manipulation

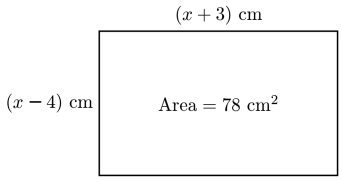
A23 26 Marks Dropped 2 Sep

**6 Work out** Challenge **[5]**

The diagram shows a rectangle with width $(x + 3)$ cm and height $(x - 4)$ cm.

The area of the rectangle is $78$ cm$^2$.

Work out the value of $x$. You must show your algebraic working.




Not drawn accurately