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# Math Fundamentals 1 Quick Reference Guide Pamphlet (Quick Study Academic)

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WORLD'S #1 ACADEMIC OUTLINE

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Math Fundamentals 1

Numbers, Operations & Measurement - Systems, Integers, Ratio-Proportion, Percents & More

Boost math confidence & test scores!

What Are Math Fundamentals?

Mathematics (abbreviated, **math**) is a form of science that deals with numbers—**number theory**, **operations** and **measurements**; all are part of mathematics.

**Fundamentals** are **essentials** or **basics**—something that is **fundamental** to what it is.

SYMBOL

- $\approx$  approximately equal
- $=$  equal
- $\neq$  not equal
- $<$  less than
- $>$  greater than
- $\leq$  less than or equal to
- $\geq$  greater than or equal to
- $+$  add
- $-$  subtract
- $\times$  multiply
- $\div$  divide

PLACE VALUE

|          |                  |              |          |                   |               |           |          |      |      |         |            |             |                 |                     |            |
|----------|------------------|--------------|----------|-------------------|---------------|-----------|----------|------|------|---------|------------|-------------|-----------------|---------------------|------------|
| billions | hundred millions | ten millions | millions | hundred thousands | ten thousands | thousands | hundreds | tens | ones | decimal | hundredths | thousandths | ten thousandths | hundred thousandths | millionths |
| 9        | 8                | 7            | 6        | 5                 | 4             | 3         | 2        | 1    | 0    | .       | 1          | 2           | 3               | 4                   | 5          |

ROMAN NUMERALS

|      |    |         |     |      |       |
|------|----|---------|-----|------|-------|
| I    | 1  | XL      | 40  | CC   | 200   |
| II   | 2  | L       | 50  | CCC  | 300   |
| III  | 3  | CL      | 150 | CD   | 400   |
| IV   | 4  | LX      | 60  | D    | 500   |
| V    | 5  | LXX     | 70  | DC   | 600   |
| VI   | 6  | LXXX    | 80  | DCC  | 700   |
| VII  | 7  | LXXXI   | 81  | DCCC | 800   |
| VIII | 8  | LXXXII  | 82  | CM   | 900   |
| IX   | 9  | LXXXIII | 83  | M    | 1,000 |
| X    | 10 |         |     |      |       |

OPERATIONS

Operation Solution

|                         |            |
|-------------------------|------------|
| $+$ addition            | sum        |
| $-$ subtraction         | difference |
| $\times$ multiplication | product    |
| $\div$ division         | quotient   |

Order of Operations

- G** **Grouping symbols** – solve inside grouping symbols first; grouping symbols include ( ), [ ], { },  $\overline{\phantom{x}}$
- E** **Exponents** – always set superscript (i.e., above integer); EX:  $10^2$ ,  $10^{-1}$
- M&D** **Multiplication & Division** – in the order of appearance (i.e., first come, first served)
- A&S** **Addition & Subtraction** – in the order of appearance (i.e., first come, first served)

Decimal Operations

| Use Up Decimals? | Process                                                                                                                                                                                                                                                                               | Examples                                                                                                                                                                                         |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $+$ yes          | Line up decimals<br>Add normally<br>Drop decimal straight down in sum                                                                                                                                                                                                                 | $23.05 + 328$ change to<br>to<br>$23.05$<br>$+ 328$<br>$351.05$                                                                                                                                  |
| $-$ yes          | Line up decimals<br>Subtract normally<br>Drop decimal straight down in difference                                                                                                                                                                                                     | $9.887 - 3.672$ change to<br>to<br>$9.887$<br>$- 3.672$<br>$6.215$                                                                                                                               |
| $\times$ no      | Multiply normally<br>Count places to right of all decimals in problem<br>Move decimal to left same number of places in solution                                                                                                                                                       | $31.2 \times 37$ change to<br>to<br>$31.2$<br>$\times 37$<br>$1154.4$                                                                                                                            |
| $\div$ no        | If <b>NO</b> decimal in dividend, divide normally<br>Bring UP decimal from dividend into quotient<br>If decimal in divisor, move decimal in divisor to right to create whole number<br>Move decimal in dividend same number of places<br>Bring UP decimal from dividend into quotient | $30.5 \div 5$ change to<br>to<br>$6.1$<br>$5 \overline{)30.5}$<br>$6.1$<br>$75.3 \div 6.22$ change to<br>to<br>$6.22 \overline{)75.3}$ change to<br>to<br>$12.048$<br>$625 \overline{)7530.000}$ |

Integer Operations

| Signs                    | Process                                                                                       | Examples                                                             |
|--------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| $+$ Same Signs           | Answer keeps same sign; pos + pos = pos; neg + neg = neg                                      | $-3 + -8 = -11$                                                      |
| $+$ Different Signs      | Subtract the numbers; keep sign of number with greatest absolute value; so answer is negative | $-8 + 3 = -5$ (8 has greatest absolute value, so answer is negative) |
| $-$ Same Signs           | "Add the Opposite" – change to addition; use opposite of 2nd integer; follow addition process | $-3 - 1$ change to:<br>$-3 + 1$                                      |
| $-$ Different Signs      | "Add the Opposite" – change to addition; use opposite of 2nd integer; follow addition process | $-3 - (-2)$ change to:<br>$-3 + 2 = -1$                              |
| $\times$ Same Signs      | Positive product: pos $\times$ pos = pos; neg $\times$ neg = pos                              | $-6 \times -3 = 18$                                                  |
| $\times$ Different Signs | Negative product: pos $\times$ neg = neg; neg $\times$ pos = neg                              | $-6 \times 3 = -18$                                                  |
| $\div$ Same Signs        | Positive quotient: pos $\div$ pos = pos; neg $\div$ neg = pos                                 | $-18 \div -3 = 6$                                                    |
| $\div$ Different Signs   | Negative quotient: pos $\div$ neg = neg; neg $\div$ pos = neg                                 | $18 \div -3 = -6$                                                    |

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## Synopsis

**NUMBERS, OPERATIONS & MEASUREMENTS** This fantastic overview of fractions, ratios, proportions, properties and more is great for middle and high school students. It will help boost math confidence and test scores. It includes information on: symbols place value roman numerals decimal operations integer operations fraction operations factorization greatest common factors & least common multiples scientific notation ratios & proportions measurement properties and much more |

## Book Information

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## Customer Reviews

I am extremely pleased with this product. I love all of the bar charts quick study guides. They are great for all ages to have on hand for those sneaky formulas we constantly need reminders with. I am a home educator and work with children in various ages and I recommend getting this entire series of Fundamentals from the very beginning. You never know as a parent or teacher when you will be asked a question you just can't remember, or to have on hand for quick reference for students to have at their fingertips. The quality is great and holds up well to long term use. I keep these in a binder with our math study tools so anyone can access them and not worry about forgetting steps.

The quick study reference guides for math fundamentals has been a blessing in disguise and has helped in more ways than one. It has allowed me to help tutor my high school students with their

order of operations as well as been a handy guide I could slip into a clip board over my desk for whenever I've done order of operations or worked simple algebraic equations. The print is large and easy to read and the clear laminated cover is so wonderful, you can spill your coffee on it and it won't ruin it! If your taking any math classes, I'd recommend having one of these around. They are helpful in more ways than one.

Christmas hit, even for the old folks. Great reference chart. I got one for me and then purchased more for other family members. Quicker than google. Lots of great info and pretty handy overall. Love that it's laminated. I got the Weights and Measures Guide, too. We had a great "quiz fest" on Christmas Day!

I have a 14yr old that I home school and he is having trouble with Math. These charts are very detailed and self explanatory and I would encourage anyone struggling in Math to try these out. They really do help. The cost is very low and they deliver very very quickly!

It's not just 1 page front and back. It's actually one big sheet folded in half to make 4 pages. Reminds you in a more clear way how to do all the basic arithmetic, how to factor, reduce etc. Really helpful and so much clearer than it was when I was first trying to learn it as a kid.

This is a two sided sheet. great for students. goes along with 2 & 3 math sheets. convenient for placing in notebooks or binders. i like the lamination

Of all the math references I have purchased this gets usedt he most. It really illustrates how ruty my skills have become and how mucg I really needed a tool like this.

So glad I ordered this, just started college and it was a great refresher for me. I use it all the time and will be able to pass it along to my niece as well.

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