

M1 Maths

N1-5 Calculators

- using calculators to add, subtract, multiply and divide whole numbers, decimal fractions, negative numbers and common fractions

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Summary

To perform operations on whole numbers and decimal fractions with a calculator, just enter the numbers and operations as they appear in the calculation.

To enter negative numbers, press the $(-)$ button before the number, or in some cases, the $+/-$ button after it.

To enter common fractions on a calculator with a fraction button (a^b/c), enter the numerator, then a^b/c , then the denominator, or, in the case of a mixed number, the whole number part, then a^b/c , then the numerator, then a^b/c , then the denominator.

To enter common fractions on a calculator without a fraction key, convert the fractions to decimals, then enter them. On a scientific or graphics calculator, you can enter them as division expressions and the calculator will convert for you as it does the calculation.

Learn

Adding, subtracting, multiplying and dividing numbers on a calculator is easy. Just enter the first number, press the operation button, then enter the second number, then press '=' or 'Enter'.



Practice

Q1 Do the following with your calculator.

- | | | | |
|-----------------------|----------------------|--------------------------|------------------|
| (a) $4 + 9$ | (b) $16 - 3$ | (c) 6×8 | (d) $20 \div 5$ |
| (e) $328 + 94$ | (f) $1057 - 479$ | (g) 734×29 | (h) $73 \div 14$ |
| (i) $4.38 + 2.1$ | (j) $20 - 1.692$ | (k) 3.8×3.2 | (l) $5 \div 2.9$ |
| (m) $180.5 \div 6.93$ | (n) $40.27 + 9.8341$ | (o) 0.00004×257 | (p) $100 - 4.92$ |

Performing operations on negative numbers with a calculator

We do this exactly the same way as we perform operations of positive numbers. The only thing that's new is knowing how to enter a negative number on the calculator.

Scientific and graphics calculators have a special button for entering negative numbers.

On graphics calculators and some scientific calculators, the button is labelled $(-)$. This acts as a negative sign. Note that the brackets are there to distinguish the button from the subtraction button which is just $-$. The two buttons do different things and are not interchangeable!



If you want to enter the number -51 , you press $(-)$, then 5 then 1. The number should show in the screen as -51 .

Then you do the operations the usual way. If you want to do -51×-6 , just press $(-)$ 5 1 \times $(-)$ 6 ENTER. Easy! You should get 306. Note that the answer is positive. If you enter $-51 + -6$, you will get a negative answer, -57 . Make sure you know what a negative answer looks like on your calculator.

On other calculators, the negative button is labelled $+/-$. With these calculators, you have to press the button **after** putting the number in. So to enter -51 , you press 5 1 $+/-$. Then you do the operation the same as above. So, to do -51×-6 , press 5 1 $+/-$ \times 6 $+/-$ ENTER. These types of calculators are becoming less common.

Practice

Q2 Use a calculator to calculate the following:

(a) $-2 + -5$

(b) $6 - -4$

(c) -5×4

(d) $-8 \div -5$

(e) $-3 - -5$

(f) $-2.8 - 4.7$

(g) -0.36×-20

(h) $2 \div -6$

(i) $4.7 + -7$

Performing operations on common fractions with a calculator

Some calculators have a fraction key. It usually has something like a^b/c written on it. Other calculators do not have one. You need to be able to add, subtract, multiply and divide fractions on calculators with and without a fraction key.

Calculators with a fraction key

To enter a proper or improper fraction, just enter the numerator, then press the a^b/c key, then enter the denominator. For example, to enter $7/20$, press 7, a^b/c , 2, 0. Then, if you wanted to multiply it by $3/4$, continue by pressing \times , 3, a^b/c , 4, =. Likewise for other operations. The calculator will give the answer as a common fraction, though it may look a bit different from the way we normally write common fractions. It may write both the numerator and denominator in full-size numbers separated by a small back-to-front L. So the answer to the example, $21/80$, may show as 21] 80.

To enter mixed numbers, use the a^b/c key twice. For example, to enter $2\frac{5}{8}$, press 2, a^b/c , 5, a^b/c , 8. To calculate $15\frac{3}{8} - \frac{5}{12}$, press 1, 5, a^b/c , 3, a^b/c , 8, $-$, 5, a^b/c , 1, 2, =. The answer will be $14\frac{23}{24}$. Mixed number answers may show on the calculator with two backward Ls. $14\frac{23}{24}$ might show as 14] 23] 24.

Do quite a bit of practice and you will find the method becomes quite automatic.



Calculators without a fraction key

Doing fraction operations is more work without a fraction key, but it is still quite possible.

If you are using a simple four-function calculator, you need to convert each fraction to a decimal before you do the operation. For example to do $2\frac{3}{8} \div \frac{5}{6}$, you have to change each fraction to a decimal. The whole number part stays the same; you convert the fraction part to a decimal by dividing the numerator by the denominator. So to change $2\frac{3}{8}$ to a decimal, leave the 2, divide 3 by 8 (which gives 0.375), then put the 2 and the 0.375 together to make 2.375. You can get this by entering $3 \div 8 + 2$. To change $\frac{5}{6}$ to a decimal, just divide 5 by 6 to get 0.833333... Then do $2.375 \div 0.83333333$. You might need to jot down the decimal numbers so you don't forget them while you are working out the others.

If you are using a scientific calculator, you can enter the whole operation at once, but remember to put brackets around each fraction so the operations get done in the correct order. For the example above, you would enter $(2 + 3 \div 8) \div (5 \div 6)$.

One difference with using a calculator without a fraction key is that the answer might be given as a decimal fraction rather than a common fraction. You can convert this back if you need to.

Practice

Q3 Use a calculator to calculate the following. Use the fraction key if there is one.

- (a) $\frac{1}{2} + \frac{1}{4}$ (b) $\frac{2}{5} - \frac{1}{10}$ (c) $\frac{2}{3} \times \frac{1}{4}$ (d) $\frac{4}{3} \div \frac{1}{3}$
(e) $\frac{1}{4} - \frac{1}{5}$ (f) $\frac{1}{2} - \frac{3}{4}$ (g) $\frac{5}{3} - \frac{3}{5}$ (h) $2 - \frac{4}{7}$
(i) $\frac{3}{5} \times 3$ (j) $-3 \div \frac{2}{3}$ (k) $2\frac{1}{2} - 1\frac{3}{4}$ (l) $\frac{3}{8} + 1\frac{1}{4}$
(m) $2\frac{4}{5} \times \frac{5}{7}$ (n) $3\frac{1}{5} \div \frac{4}{7}$ (o) $-\frac{5}{8} \times -1\frac{3}{5}$

Q4 Calculate the following on a calculator without using a fraction key:

- (a) $\frac{1}{2} - \frac{1}{4}$ (b) $\frac{4}{5} - \frac{3}{10}$ (c) $\frac{1}{3} \times \frac{1}{4}$ (d) $\frac{4}{3} \div \frac{1}{6}$
(e) $\frac{1}{4} - \frac{1}{10}$ (f) $\frac{1}{2} - \frac{3}{4}$ (g) $\frac{5}{3} - \frac{4}{5}$ (h) $3 - \frac{4}{9}$
(i) $\frac{3}{5} \times 6$ (j) $-4 \div \frac{3}{4}$ (k) $2\frac{1}{2} + 1\frac{3}{4}$ (l) $\frac{5}{8} + 1\frac{1}{4}$
(m) $2\frac{4}{5} \times \frac{5}{7}$ (n) $4\frac{4}{5} \div \frac{4}{7}$ (o) $-\frac{1}{8} \times -1\frac{3}{5}$

Solve

Q51 There are 37 people at Steph's party. She orders pizza assuming that everyone will eat $1\frac{3}{8}$ pizzas. How many does she order, and how many eighths will be left over for the dog?

Q52 What is one fifth of 2 hours 35 minutes?

Revise

Revision Set 1

Q61 Use a calculator to calculate the following:

- (a) $4.38 + 2.6$ (b) $6.9 - 1.02748$ (c) 16×0.038
(d) $12.7 \div 1.99$ (e) -2×-7 (f) $-4 + 6$

Q62 Use a calculator to calculate the following. Use the fraction key if there is one.

- (a) $\frac{2}{5} - \frac{3}{10}$ (b) $\frac{2}{7} \times \frac{1}{4}$ (c) $\frac{7}{3} \div \frac{1}{3}$
(d) $-3 \div \frac{2}{3}$ (e) $2\frac{1}{2} - 1\frac{3}{4}$ (f) $-\frac{5}{8} \times -1\frac{3}{5}$

Q63 Calculate the following on a calculator without using a fraction key:

- (a) $\frac{3}{5} - \frac{3}{10}$ (b) $\frac{2}{7} \times \frac{3}{4}$ (c) $\frac{7}{3} \div \frac{1}{6}$
(d) $-4 \div \frac{2}{3}$ (e) $2\frac{1}{2} - 1\frac{3}{4}$ (f) $-\frac{3}{8} \times -1\frac{3}{5}$

Answers

- Q1 (a) 13 (b) 13 (c) 48 (d) 4
(e) 422 (f) 578 (g) 21 287 (h) 5.2143
(i) 6.48 (j) 18.302 (k) 12.16 (l) 1.7241
(m) 25.859 (n) 50.1041 (o) 0.01028 (p) 95.08
- Q2 (a) 10 (b) 10 (c) -20 (d) 1.6 (e) 2
(f) -7.5 (g) 7.2 (h) -0.333... (i) 2.3
- Q3 (a) $\frac{3}{4}$ (b) $\frac{3}{10}$ (c) $\frac{1}{6}$ (d) 4
(e) $\frac{1}{20}$ (f) $-\frac{1}{4}$ (g) $\frac{16}{15}$ (h) $1\frac{3}{7}$
(i) $\frac{9}{5}$ (j) $-\frac{9}{2}$ (k) $\frac{3}{4}$ (l) $1\frac{5}{8}$
(m) 2 (n) $\frac{28}{5}$ (o) 1
- Q4 (a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) $\frac{1}{12}$ (d) 8
(e) $\frac{3}{20}$ (f) $-\frac{1}{4}$ (g) $\frac{13}{15}$ (h) $2\frac{5}{9}$
(i) $\frac{18}{5}$ (j) $-\frac{15}{4}$ (k) $4\frac{1}{4}$ (l) $1\frac{7}{8}$
(m) 2 (n) $\frac{42}{5}$ (o) $\frac{1}{5}$
- Q51 51 pizzas, one eighth left for the dog.
Q52 31 minutes
- Q61 (a) 11.388 (b) 5.87252 (c) 0.608
(d) 6.38191 (e) 14 (f) 2
- Q62 (a) $\frac{1}{10}$ (b) $\frac{1}{14}$ (c) 7
(d) $-\frac{9}{2}$ (e) $\frac{3}{4}$ (f) 1
- Q63 (a) $\frac{3}{10}$ (b) $\frac{3}{14}$ (c) 14
(d) 6 (e) $2\frac{3}{4}$ (f) $\frac{3}{5}$