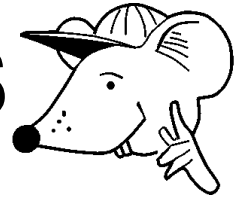


MATHEMATICS



N.S. Yr. 4 P.72

Checking results of calculations.

Equipment

Paper, pencil, calculator with four functions plus square root button (for later use) and, if possible, change of sign button.

MathSphere

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Concepts

This module is concerned with developing techniques for checking calculations. It is very easy for children to assume that because a calculation is done on a calculator, it must be correct. Their faith in the electronics is probably justified, but what about their faith in their own abilities?

We look here at checking using the following methods:

a) Doing the inverse operations. If a division has just been calculated, do the opposite multiplication to check.

Eg. $180 \div 5 = 36$ Check by doing 36×5 to see if it comes to 180

b) Checking a total by adding the numbers in reverse order.

Eg. $23 + 31 + 17 + 62 = 133$
Does $62 + 17 + 31 + 23$ also equal 133 ?

c) Doing an equivalent calculation.

Eg. $182 + 36 = 218$ Check with (say) $100 + 40 + 40 + 2 + 30 + 6$
or $180 + 30 + 2 + 6$

d) Perform an approximate calculation to see if the answer is in the correct range.

Eg. $389 + 105 = 494$ Check: $400 + 100 = 500$

Eg. $88 \times 6 = 528$ Check: $100 \times 5 = 500$

e) Carry out some simple tests such as two even numbers multiplied together always give an even number. The sum of an odd number and an even number is always an odd number.



Always check your answers on a calculator.

It is very easy to press the wrong buttons!

Here are some ways to check your calculations.



Method 1: Do the opposite calculation.

1. Work out these sums and then do the opposite calculation to check your answer.

Eg. in part **a.** work out $735 - 44 = 691$ and then check with $691 + 44$ and see if it comes to **735**

- a.** $735 - 44$ **b.** $460 \div 4$ **c.** What is half of 156 ? **d.** 74×9
e. Find $\frac{1}{2}$ of 678 **f.** $411 + 386$ **g.** $38 + 632$ **h.** $225 \div 5$

Method 2: Add numbers in the reverse order.

2. Sometimes we want to check the total of lots of numbers. One way to do this is to add them in the reverse order.

Eg. $23 + 17 + 31 + 43 + 12 = 126$

Check by adding: $12 + 43 + 31 + 17 + 23$

Try this idea with these sums. You can **use a calculator** if you wish.

- a.** $25 + 38 + 16 + 43 + 37 + 19 + 24$
b. $132 + 154 + 231 + 385 + 431 + 444 + 312 + 423 + 173$
c. $527 + 612 + 534 + 623 + 554 + 634 + 312 + 644$
d. $453 + 18 + 84 + 734 + 433 + 265 + 27$



Here you can try some different ideas for checking your work.

Method 1: Do the inverse (opposite) calculation.

1. Work out these sums and then do the opposite calculation to check your answer.

Eg. in part **a.** work out $67 + 25 = 92$ and then check with $92 - 25$ and see if it comes to **67**

- a.** $67 + 25$ **b.** What is $\frac{1}{2}$ of 274 ? **c.** 27×5 **d.** 39×7
e. $734 - 389$ **f.** $966 \div 3$ **g.** $857 + 528$ **h.** What is $\frac{1}{2}$ of 772 ?

Method 2: Add numbers in the reverse order.

2. Sometimes we want to check the total of lots of numbers. One way to do this is to add them in the reverse order.

Eg. $54 + 62 + 83 + 25 + 41 = 265$

Check by adding: $41 + 25 + 83 + 62 + 54$

Try this idea with these sums. You can **use a calculator** if you wish.

- a.** $47 + 82 + 32 + 22 + 73 + 16 + 75$
b. $425 + 633 + 412 + 251 + 527 + 527 + 644 + 554 + 217$
c. $534 + 524 + 623 + 889 + 773 + 941 + 625 + 778$
d. $65 + 842 + 52 + 684 + 778 + 423 + 18$

Piece of cake really.



Here are some columns of numbers to add up.

First of all, add them up **on your calculator** starting at the top and working down.

Next, add them from the bottom up.

Column	A	B	C	D
	23	23	244	£2.40
	45	54	532	£3.67
	42	71	675	£6.79
	56	25	481	£1.23
	25	88	438	£5.56
	18	93	907	£7.91
	54	54	890	£5.04
	32	67	458	£8.62
	76	53	608	£5.80
	44	27	321	£9.03
	59	16	542	£2.57
	62	38	647	£4.37
	87	65	455	£1.72
	31	48	234	£6.21
	25	97	165	£3.45
	35	35	768	£5.03
	17	64	902	£2.20
Top to bottom				
Bottom to top				

Method 3: Think of an equivalent sum.

In this section, you should think of another sum that will give you the same answer so you can check your calculation.

Eg. Calculate $237 + 198$ This comes to **435**

Now check with another sum that will give the same answer,
for instance $230 + 190 + 7 + 8$ or $237 + 200 - 2$

Eg. Calculate $34 \times 20 = 680$ Check with $34 \times 4 \times 5$

1. a. $37 + 98$ b. $549 - 352$ c. 85×8 d. $760 \div 2$
e. 83×5 f. $777 - 297$ g. 127×4 h. $390 \div 5$

You can discuss your equivalent sums with your friends and see what ideas you had.

For example, $36 \times 9 = (36 \times 5) + (36 \times 4)$

Or $36 \times 3 \times 3$

Or $(30 \times 9) + (6 \times 9)$

**Method 4: Check by doing an approximate sum.**

Eg. Calculate $39 \times 6 = 234$

We can check this is about right by working out $40 \times 6 = 240$

2. Here are some for you to try. Work each one out and then try an approximate sum.

- a. 22×3 b. 53×7 c. 82×9 d. $96 \div 3$
e. $316 + 523$ f. $410 - 98$ g. $75 \div 5$ h. 41×4

3. Here are some more problems. Work them out **on your calculator** and then do an approximate sum to see if your answers are about right.

- a. $(31 + 18) \times 4$ b. $522 - 423$ c. $82 + 70 - 42$
d. $£57 \div 5$ e. $£41.50 \times 52$ f. $(16 + 25) \times 31$
g. $796 + 622$ h. $(43 + 18) \times 5$ i. $£8.70 \times 52$

Method 3: Think of an equivalent sum.

In this section, you should think of another sum that will give you the same answer so you can check your calculation.

Eg. Calculate 46×3 This comes to **138**

Now check with another sum that will give the same answer,
for instance $(40 \times 3) + (6 \times 3)$

Eg. Calculate $674 - 285 = 389$ Check with $600 + 70 + 4 - 200 - 80 - 5$

1. a. $26 + 91$ b. $712 - 582$ c. 43×9 d. $130 \div 5$
e. 48×5 f. $340 - 180$ g. 111×5 h. $855 + 65$

You can discuss your equivalent sums with your friends and see what ideas you had.

For example, $43 \times 8 = (43 \times 5) + (43 \times 3)$

Or $43 \times 2 \times 2 \times 2$

Or $(40 \times 8) + (3 \times 8)$

**Method 4: Check by doing an approximate sum.**

Eg. Calculate $69 \times 4 = 276$

We can check this is about right by working out $70 \times 4 = 280$

2. Here are some for you to try. Work each one out and then try an approximate sum.

- a. 25×4 b. 58×3 c. 68×5 d. $180 \div 6$
e. $256 + 461$ f. $631 - 433$ g. $240 \div 6$ h. 89×9

3. Here are some more problems. Work them out **on your calculator** and then do an approximate sum to see if your answers are about right.

- a. $(23 + 51) \times 4$ b. $688 - 303$ c. $48 + 52 - 38$
d. $£623 \div 5$ e. $£16.60 \times 38$ f. $(23 + 19) \times 19$
g. $879 + 479$ h. $(31 + 61) \times 12$ i. $£4.50 \times 38$

Method 5: Know some facts about numbers.

You should know the following facts by now:

If you **add** two or more **even** numbers, the answer is always **even**.

If you **add** two **odd** numbers, the answer is always **even**.

If you **add** three **odd** numbers, the answer is always **odd**.

If you **add** an **odd** number and an **even** number, the answer is always **odd**.

If you **subtract** two **even** numbers, the answer is always **even**.

If you **subtract** two **odd** numbers, the answer is always **even**.

If you **subtract** an **even** number and an **odd** number, the answer is always **odd**.

Say which of these sums will give you an odd answer and which will give you an even answer.



Eg. **1a.** is definitely **odd**.

No calculators for this bit please!

1. a. $32 + 25$

d. $98 + 34$

g. $95 + 27 + 19$

b. $18 + 46$

e. $532 - 357$

h. $53 + 7$

c. $24 - 16$

f. $317 + 83$

i. $511 - 379$

2. a. $731 + 824$

d. $859 - 479$

g. $624 - 378$

b. $372 - 265$

e. $73 + 85 + 91$

h. $85 + 71 + 93$

c. $885 - 477$

f. $25 + 37$

i. $844 + 315$

3. a. $893 + 651$

d. $884 + 246$

g. $936 - 466$

b. $627 + 279 + 833$

e. $173 - 98$

h. $773 - 366$

c. $666 + 777$

f. $883 - 348$

i. $895 + 559 + 153$

Method 5: Know some facts about numbers.

You should know the following facts by now:

If you **add** two or more **even** numbers, the answer is always **even**.

If you **add** two **odd** numbers, the answer is always **even**.

If you **add** three **odd** numbers, the answer is always **odd**.

If you **add** an **odd** number and an **even** number, the answer is always **odd**.

If you **subtract** two **even** numbers, the answer is always **even**.

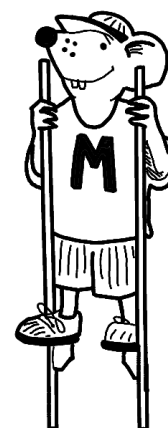
If you **subtract** two **odd** numbers, the answer is always **even**.

If you **subtract** an **even** number and an **odd** number, the answer is always **odd**.

Say which of these sums will give you an odd answer and which will give you an even answer.

Eg. **1a.** is definitely **odd**.

No calculators for this bit please!



- | | | |
|-------------------|----------------------|----------------------|
| 1. a. $46 + 23$ | b. $74 + 88$ | c. $32 - 15$ |
| d. $736 + 213$ | e. $843 - 547$ | f. $357 + 32$ |
| g. $75 + 31 + 65$ | h. $78 + 53$ | i. $264 - 167$ |
| | | |
| 2. a. $765 + 486$ | b. $322 - 199$ | c. $686 - 442$ |
| d. $863 - 434$ | e. $21 + 65 + 87$ | f. $45 + 76$ |
| g. $459 - 327$ | h. $37 + 53 + 71$ | i. $481 + 673$ |
| | | |
| 3. a. $648 + 349$ | b. $371 + 933 + 237$ | c. $633 + 851$ |
| d. $637 + 449$ | e. $481 - 273$ | f. $658 - 378$ |
| g. $763 - 264$ | h. $188 - 145$ | i. $745 + 727 + 923$ |

Answers**Page 3**

1. a. 691 b. 115 c. 78 d. 666 e. 339 f. 797
 g. 670 h. 45
2. a. 202 b. 2 685 c. 4 440 d. 2 014

Page 4

1. a. 92 b. 137 c. 135 d. 273 e. 345 f. 322
 g. 1 385 h. 386
2. a. 347 b. 4 190 c. 5 687 d. 2 862

Page 5

Col A	Col B	Col C	Col D
731	918	9 267	£81.60

Page 6

1. a. 135 b. 197 c. 680 d. 380 e. 415 f. 480
 g. 508 h. 78
2. a. 66 b. 371 c. 738 d. 32 e. 839
 f. 312 g. 15 h. 164
3. a. 196 b. 99 c. 110 d. £11.40 e. £2 158.00
 f. 1 271 g. 1 418 h. 305 i. £452.40

Page 7

1. a. 117 b. 130 c. 387 d. 26 e. 240 f. 160
 g. 555 h. 920
2. a. 100 b. 174 c. 340 d. 30 e. 717
 f. 198 g. 40 h. 801
3. a. 296 b. 385 c. 62 d. £124.60 e. £630.80
 f. 798 g. 1 358 h. 1 104 i. £171.00

Page 8

1. a. odd b. even c. even d. even e. odd
 f. even g. odd h. even i. even
2. a. odd b. odd c. even d. even
 e. odd f. even g. even h. odd
 i. odd
3. a. even b. odd c. odd d. even e. odd
 f. odd g. even h. odd i. odd

Answers (Contd)**Page 9**

1. a. odd b. even c. odd d. odd e. even
f. odd g. odd h. odd i. odd
2. a. odd b. odd c. even d. odd
e. odd f. odd g. even h. odd
i. even
3. a. odd b. odd c. even d. even e. even
f. even g. odd h. odd i. odd