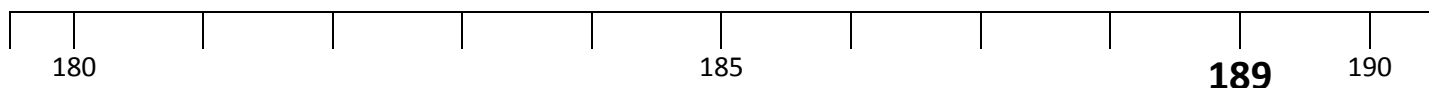# Whole Numbers: Follow-up Sheet

If you got question 1 wrong, read and complete Section 1
If you got question 2 wrong, read and complete Section 2

etc.

Section 1

Rounding 189 to the nearest 10 will give 190 because, when rounding to the nearest 10, we have a choice of rounding down to 180 or rounding up to 190.
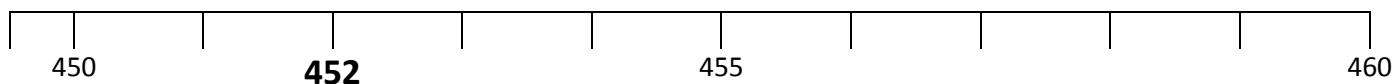
180					185				**189**	190

185 is the halfway point between 180 and 190 so 189 is closer to 190.

Our rule is when rounding to the nearest ten is that, if the units digit is five or more, we round up.

More examples:-

452 is rounded down to 450 because the units digit is 2 (less than five)

450		**452**		455					460

155 is rounded up to 160 because the units digit is 5 (five or more)

1687 is rounded up to 1690 because the units digit is 7 (five or more)

499 is rounded up to 500 because the units digit is 9 (five or more)

Here's another way of looking at the rounding process. We are rounding to the nearest ten so we draw a line after the tens column.

23|**8** ⟶ 240

↑
This digit is five or more so we round up.

56|**2** ⟶ 560

↑
This digit is less than 5 so we round down.

Round these numbers to the nearest ten:-

1) 46   **2)** 122   **3)** 255   **4)** 71   **5)** 485

6) 166   **7)** 45   **8)** 1333   **9)** 49   **10)** 199
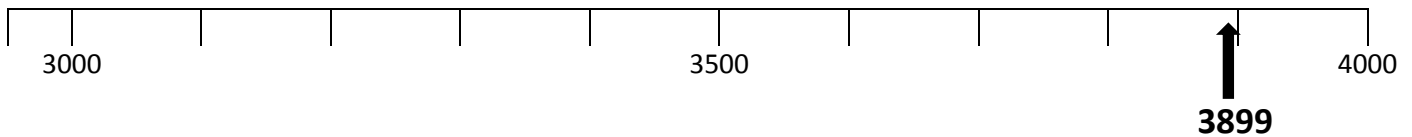
11) 6   **12)** 2

Section 2

Rounding 3899 to the nearest 1000 will give 4000 because, when rounding to the nearest 1000, we have a choice of rounding down to 3000 or rounding up to 4000.

3500 is the halfway point between 3000 and 4000 so 3899 is closer to 4000.

Our rule is when rounding to the nearest thousand is that, if the hundreds digit is five or more, we round up.

More examples:-

4566 is rounded up 5000 because the hundreds digit is 5 (five or more)

1855 is rounded up to 2000 because the hundreds digit is 8 (five or more)

8322 is rounded down to 8000 because the hundreds digit is 3 (less than five)

4199 is rounded down to 4000 because the units digit is 1 (less than five)

Here's another way of looking at the rounding process. We are rounding to the nearest thousand so we draw a line after the thousands column.

2|845⟶   3000

This digit is five or more so we round up.

7|388⟶   7000

This digit is less than five so we round down.

Round these numbers to the nearest thousand:-

1) 4656   **2)** 1223   **3)** 7255   **4)** 8971   **5)** 4850

6) 1466   **7)** 4589   **8)** 1333   **9)** 513   **10)** 499

Section 3

A good estimate for 289 + 312 is 300 + 300 = 600

We can get a rough idea of the answer by rounding each number off to the nearest hundred or thousand.

More examples:-

A good estimate for 203 + 599 is 200 + 600 = 800

A good estimate for 789 − 312 is 800 − 300 = 600

A good estimate for 2890 + 4008 is 3000 + 4000 = 7000

A good estimate for 2899 − 989 is 3000 − 1000 = 1300

Round to the nearest hundred to estimate the answers to these calculations:-

1) 489 − 203　　　　**2)** 689 + 109　　　　**3)** 589 + 602　　　　**4)** 698 − 99　　　　**5)** 98 + 411

Round to the nearest thousand to estimate the answers to these calculations:-

6) 7055 + 1999　　　**7)** 6998 − 2033　　　**8)** 8999 + 4011　　　**9)** 3021 − 999　　　**10)** 989 + 1023

Section 4

A good estimate for 897 ÷ 9.2 is 900 ÷ 9 = 100

We can get a rough idea of the answer by rounding each number off to the nearest hundred or thousand or just the nearest whole number if it is small.

More examples:-

A good estimate for 203 × 1.9898 is 200 × 2 = 400

A good estimate for 789 ÷ 4.08 is 800 ÷ 4 = 200

A good estimate for 2890 × 3.121 is 3000 × 3 = 9000

A good estimate for 1789 ÷ 5.987 is 1800 ÷ 6 = 300

Estimate the answers to these calculations:-

1) 489 ÷ 5.02　　　　**2)** 689 × 1.889　　　　**3)** 7055 ÷ 6.99　　　　**4)** 3021 × 2.99　　　　**5)** 1999 ÷ 4.08

6) 4989 × 3.11　　　　**7)** 799 ÷ 3.99　　　　**8)** 313 × 7.99　　　　**9)** 1983 ÷ 5.08　　　　**10)** 4993 × 1.99

Section 5

8^3 means $8 \times 8 \times 8$

More examples:-

$5^4 = 5 \times 5 \times 5 \times 5$

$7^2 = 7 \times 7$

$9^5 = 9 \times 9 \times 9 \times 9 \times 9$

Now copy and complete: -

1) $7^3 = $ ………… **2)** $4^3 = $ ………… **3)** $3^4 = $ ………… **4)** $3^5 = $ ………… **5)** $5^3 = $ …………

6) $2^6 = $ ………… **7)** $6^2 = $ ………… **8)** $5^4 = $ ………… **9)** $4^5 = $ ………… **10)** $3^7 = $ …………

Section 6

3^4

$= 3 \times 3 \times 3 \times 3$

$= 9 \times 3 \times 3$

$= 27 \times 3$

$= 81$

It may be necessary to do a "chimney sum" for some of these calculations. (You are expected to do these calculations without a calculator)

Calculate: -

1) 4^3 **2)** 5^3 **3)** 6^3 **4)** 7^3 **5)** 8^3

6) 5^4 **7)** 6^4 **8)** 7^4 **9)** 3^5 **10)** 4^5

Section 7

Compare 2^3 and 3^2.

$2^3 = 2 \times 2 \times 2 = 8$

$3^2 = 3 \times 3 = 9$

Note that they are **not** equal! 3^2 is larger than 2^3

Now try these examples:-

1) Compare 3^4 and 4^3. Which is larger?   **2)** Compare 2^5 and 5^2. Which is larger?

3) Compare 6^3 and 7^2. Which is smaller?   **4)** Compare 5^3 and 3^5. Which is smaller?

5) Compare 5^4 and 6^3. Which is larger?   **6)** Compare 10^2 and 2^7. Which is larger?

7) Compare 4^3 and 8^2. What do you notice?

Section 8

$3 + \underline{\mathbf{4 \times 5}}$ <--- BIDMAS reminds us that we should do division and multiplication before addition

$= 3 + 20$

$= 23$

More examples:-

$\underline{\mathbf{20 \div 5}} - \underline{\mathbf{6 \div 3}}$ <--- BIDMAS reminds us that we should do division and multiplication before addition

$= 4 - 2$

$= 2$

$6 + \underline{\mathbf{5 \times 2}} + 3$ <--- BIDMAS reminds us that we should do division and multiplication before addition

$= 6 + 10 + 3$

$= 19$

Now try these examples:-

1) $4 \times 6 + 5 \times 2$ **2)** $4 + 6 \times 5 + 2$ **3)** $7 \times 2 - 3 \times 3$ **4)** $8 + 2 \times 3 + 2$

5) $20 \div 2 - 20 \div 10$ **6)** $20 + 20 \div 2 + 20 \div 10$ **7)** $10 + 2 \times 3 + 3 \times 2$ **8)** $30 \div 5 - 30 \div 6$

9) $3 \times 2 + 4 \times 5 + 6 \times 7$ **10)** $40 \div 10 + 40 \div 8 + 40 \div 5$ **11)** $2 + 3 \times 4 + 5 \times 6 + 2$ **12)** $20 - 3 \times 3 - 2 \times 2$

Section 9

$(3 + 2)^2$ <--- BIDMAS reminds us that operations in brackets should be carried out first

$= 5^2$

$= 25$

More examples:-

$\quad 3 \times (4 + 5)$ <--- BIDMAS reminds us that operations in brackets should be carried out first

$\quad = 3 \times 9$

$\quad = 27$

$\quad (3 + 4) \times (2 + 3)^2$ <--- BIDMAS reminds us that operations in brackets should be carried out first

$\quad = 7 \times 5^2$

$\quad = 7 \times 25$

$\quad = 175$

Now try these examples:-

1) $6 \times (3 + 2)$ **2)** $(9 - 7) \times (3 + 4)$ **3)** $(1 + 2 + 3) \times 10$

4) $3^2 + 4^2$ **5)** $(3 + 4)^2$ **6)** $(4 + 3)^2 - (2 + 3)^2$

7) $10 \times (3 + 4)^2$ **8)** $2 \times (8 - 5)^2$ **9)** $(1 + 2)^2 + (2 + 3)^2 + (3 + 4)^2$

10) $(2 + 3)^2 \times 3$ **11)** $2 \times (3 + 4 + 5) \times 2$ **12)** $(7 + 3)^2 \div (7 - 2)^2$