

Year 9 - Worksheet 8

ARE GENIUSES ECCENTRIC?

Find the value of the following expressions after substituting $x = 2$.
For each answer, go to the table to work out the letter to go in the table below.

1.	$x^2 - 1$		Y
2.	$2x^2 + 1$		S
3.	$5x - x^2$		H
4.	$3x^2 + 1$		I
5.	$5x^2 - 4x$		U
6.	$3x^2 \div 6x$		D
7.	$(5x + 3x) \div 4x$		B
8.	$\frac{5x - 6}{4} \times 5$		X
9.	$2x + 3$		E
10.	$2(x^2 - 2)$		T
11.	$\frac{6x^2}{x + 1}$		N
12.	$3x^2 - 1$		K
13.	$(x + 1)^2 + 5$		O

3	7	9		4	6	7	3		4	6	13	8	11

14	12	4	9	13	1	7		4	6	7		2	14	5

ORDER OF OPERATIONS

The following sums have either operations (+, -, × or ÷) or brackets missing. Rewrite each sum to make the given answer.

1. $2 + 2 \underline{\hspace{1cm}} 2 \times 2 = 0$
2. $3 \times 3 + 3 \div 2 = 6$
3. $4 + (4 \times 4) \underline{\hspace{1cm}} 0 = 4$
4. $3 \underline{\hspace{1cm}} 3 \underline{\hspace{1cm}} 3 \underline{\hspace{1cm}} 3 = 7$
5. $4 \underline{\hspace{1cm}} 2 \underline{\hspace{1cm}} 2 \underline{\hspace{1cm}} 1 = 4$
6. $3 \underline{\hspace{1cm}} 3 \underline{\hspace{1cm}} 3 \underline{\hspace{1cm}} 1 = 3$
7. $2 \underline{\hspace{1cm}} 2 \underline{\hspace{1cm}} 2 \underline{\hspace{1cm}} 2 = 1$
8. $4 \underline{\hspace{1cm}} 4 \underline{\hspace{1cm}} 4 \underline{\hspace{1cm}} 2 = 16$
9. $4 \underline{\hspace{1cm}} 4 \underline{\hspace{1cm}} 4 \underline{\hspace{1cm}} 4 = 0$
10. $8 \underline{\hspace{1cm}} 8 \underline{\hspace{1cm}} 8 \underline{\hspace{1cm}} 8 = 4$

ANOTHER APPLICATION

John needs to purchase 8 kg of fertiliser. The bags come in 3 sizes:

2 kg - \$1.30

3 kg - \$1.75

5 kg - \$3.00

1. What different combinations would sum to 8 kg?

2. What is the cheapest cost per kilogram?

3. What combinations would give the cheapest cost for 8 kg?

APPLICATION

At the end of each year students are taken to the hot pools. Costs are:

Adults: \$8
Students: \$5
Bus hire: \$650

There are 5 adults, 90 students and it takes 2 buses to transport them.

Students are charged \$20 each, but will it cover the total cost? Work out your answer on the clip board below.



Subtract the following. Do you really need a calculator?

1. $8 - 2.5 =$ _____
2. $6 - 1.28 =$ _____
3. $7 - 2.03 =$ _____
4. $8 - 0.03 =$ _____
5. $14 - 1.13 =$ _____
6. $15.45 - 15.13 =$ _____
7. $15.45 - 0.33 =$ _____
8. $15.45 - 6.67 =$ _____
9. $21.03 - 11.02 =$ _____
10. $21.03 - 12.44 =$ _____

Multiply the following. Do you really need a calculator?

1. $3 \times 1.2 =$ _____
2. $4 \times 0.05 =$ _____
3. $12 \times 1.2 =$ _____
4. $0.5 \times 1.4 =$ _____
5. $2.6 \times 0.3 =$ _____
6. $0.6 \times 0.3 =$ _____
7. $0.006 \times 0.03 =$ _____
8. $1.6 \times 0.3 =$ _____
9. $0.006 \times 3.0 =$ _____
10. $5.3 \times 0.005 =$ _____

MULTIPLYING AND DIVIDING

Answer the following. NO calculators!

1. $3.15 \times 10 =$ _____
2. $0.015 \times 100 =$ _____
3. $31.002 \times 100 =$ _____
4. $0.14 \times 10 =$ _____
5. $0.00035 \times 100 =$ _____
6. $3.15 \div 10 =$ _____
7. $0.015 \div 100 =$ _____
8. $31.002 \div 100 =$ _____
9. $0.14 \div 10 =$ _____
10. $0.00035 \div 100 =$ _____

NUMERACY STRATEGIES

Write these as multiplications.

1. $32 \div 4 =$ _____
2. $56 \div 7 =$ _____
3. $120 \div 5 =$ _____
4. $84 \div 4 =$ _____
5. $63 \div 9 =$ _____
6. $84 \div 3 =$ _____
7. $112 \div 4 =$ _____
8. $92 \div 4 =$ _____
9. $225 \div 5 =$ _____
10. $171 \div 3 =$ _____

INVESTIGATION

1. An original price of \$100 is increased by 50%. This new price is then reduced by one third. Is the final price bigger, smaller or the same as the original?
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You can quickly square a number less than 100 which ends in 5 by the following method:

e.g. 65^2

$6 \times (6 + 1) = 42$ multiply the 10s digit by 1 plus the digit value.

$65^2 = 4225$ place the digits 2 and 5 at the end.

Use this method for the following squares:

2. 25^2

3. 35^2

4. 75^2

5. 55^2

QUICK QUESTIONS

Use any strategy but no calculators!

1. $47 + 94 =$

6. $\$3.65 \times 2 =$

2. $33 - 17 =$

7. $\$1.20 \div 4 =$

3. $27 \times 5 =$

8. $73c + 17c =$

4. $91 \times 10 =$

9. $\frac{1}{4} + \frac{5}{4} =$

5. $63 \div 9 =$

10. $\frac{1}{2}$ of $\frac{1}{4} =$