Topic Check In - 1.03 Combining arithmetic operations

Calculate the following, showing all your working.

1. (3 + 6) × (9 – 2)
2. 3 + 6 × 9 – 2
3. 6 – 8 ÷ 2
4. $\sqrt{3^2 + 4^2}$
5. $((3 + \sqrt{4}) \times 2)^2$
6. Zosia says "6 + 5 × 2 is equal to 22."
   Explain why Zosia is incorrect.
7. Explain why (4 – 2) ÷ (6 – 3) could be written as $\frac{2}{3}$.
8. If the reciprocal of 5 is $\frac{1}{5}$ and the reciprocal of $\frac{1}{3}$ is 3, explain how you could find the reciprocal of $\frac{1}{2}$.
9. John makes party bags containing 1 ball, 2 sweets and 1 card. If each ball costs 50p, each sweet costs 5p and each card costs 15p, how much change will he have from £10 if he makes up 8 bags?
10. Arrange the following in order from smallest to largest.

$$\frac{4+2}{1+3} \qquad \frac{(3+1)^2}{4} \qquad \frac{3+1}{4\times 2} \qquad \frac{(3-4)^2}{1}$$

Extension

Use four 4s and any mathematical operations to make the totals 1, 2, 3, 4 etc.

4	4	4	4	=	1
4	4	4	4	=	2
4	4	4	4	=	3
4	4	4	4	=	4

Answers

1. 63
2. 55
3. 2
4. 5
5. 100
6. Because she should multiply 5 by 2 first.
7. Because after doing the subtractions you are left with 2 ÷ 3, and a division can be written as a fraction.
8. By swapping the numerator and denominator of the fraction e.g. $\frac{2}{1}$.
9. £4.00
10. $\frac{3+1}{4\times2}$ $\frac{(3-4)^2}{1}$ $\frac{4+2}{1+3}$ $\frac{(3+1)^2}{4}$

Extension

Possible solutions:

(4 + 4) ÷ (4 + 4) = 1
4 ÷ 4 + 4 ÷ 4 = 2
(4 + 4 + 4) ÷ 4 = 3
4 + (4 – 4) ÷ 4 = 4
(4 × 4 + 4) ÷ 4 = 5
4 + (4 + 4) ÷ 4 = 6
4 + 4 – 4 ÷ 4 = 7
4 × 4 ÷ 4 + 4 = 8
4 + 4 + 4 ÷ 4 = 9


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AO1	1	Solve inside the brackets before doing multiplication			
AO1	2	Multiplication before addition or subtraction			
AO1	3	Use BIDMAS			
AO1	4	Recognise that the expression under the square root symbol should be treated as being inside brackets			
AO1	5	Work out a set of brackets within a set of brackets			
AO2	6	Apply fact that multiplication comes before addition			
AO2	7	Apply BIDMAS to solve a problem			
AO2	8	Find reciprocals			
AO3	9	Solve a word problem by using correct order of operations			
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