

Exercise 4: Expressions

1. \boxed{B} $b^2 - 8b + 16 = (b - 4)(b - 4) = (b - 4)^2$
2. \boxed{D} $a(b + c) + b(a + c) + c(a + b) = ab + ac + ab + bc + ac + bc = 2ab + 2bc + 2ac$
3. \boxed{A} $-x^2y - xy^2 = -xy(x + y)$
4. \boxed{C} $(3a - 4b)(5b + 2a) = 15ab + 6a^2 - 20b^2 - 8ab = 6a^2 + 7ab - 20b^2$
5. \boxed{E} It takes $\frac{4}{3}$ cups of water to make 1 pizza, so $\frac{4}{3}x$ cups of water are required to make x pizzas. It takes $\frac{5}{4}$ cups of water to make 1 cake, so $\frac{5}{4}y$ cups of water are required to make y cakes. The total number of cups of water required to make everything is $\frac{4}{3}x + \frac{5}{4}y$.
6. \boxed{C} $4x^2 + 2x - 6 = 2(2x^2 + x - 3) = 2(x - 1)(2x + 3)$
7. \boxed{D} $(x + 2)^2 - 4x - 5 = (x + 2)(x + 2) - 4x - 5 = (x^2 + 2x + 2x + 4) - 4x - 5 = x^2 - 1 = (x + 1)(x - 1)$
8. \boxed{A} $\frac{(x + 4)^2}{x^2 - 16} = \frac{(x + 4)^2}{(x + 4)(x - 4)} = \frac{x + 4}{x - 4}$
9. \boxed{D} Factoring the denominators, we get $\frac{1}{3(x - 2)} + \frac{1}{2(x - 2)^2}$. The two fractions have a $(x - 2)$ in common but because the second fraction has two of them, $(x - 2)^2$, we'll need two in our least common denominator. When things are in common, you go with the highest power. We'll also need one factor of "3" and one factor of "2". Putting everything together, our least common denominator is $3 \cdot 2 \cdot (x - 2)^2 = 6(x - 2)^2$.
10. \boxed{E} The x burgers cost bx dollars. The total number of additional condiments is xy and they cost a total of cxy dollars. Altogether, Michael's order cost $bx + cxy$ dollars. Finally, the change he gets back is $30 - (bx + cxy)$.