<u>**Indicator 19 Class Notes by Mrs. Joshi**</u>

<u>**Identify Equivalent Expressions**</u>

<u>**(Alabama Standard: 15d--I can evaluate numerical expressions using order of operations.)**</u>

Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.

Directions. Use the properties of operations to create equivalent expressions.

c(4a + b)	
$3^2(1)$	
1y + 1y + 1y + 1y	
$6(y \times z) + 4^3$	
$5^2 \times z^2$	

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Answer Key

$c(4a + b)$	$4ac + bc$
$3^2(1)$	9
$1y + 1y + 1y + 1y$	$4y$
$6(y \times z) + 4^3$	$6yz \times 64$
$5^2 \times z^2$	$z^2 \times 25$

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Which expressions are equivalent to $x + x + x + 2$?

Choose 2 answers:

(A) $3x + 2$

(B) $3 + 2x$

(C) $3(x + 2)$

(D) $2(x + 1) + x$

(E) $5x$

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Which expressions are equivalent to $j + j + 2k$?

Choose all answers that apply:

(A) $2jk$

(B) $2(j + j + k)$

(C) None of the above

Which expressions are equivalent to $z + (z + 6)$?

Choose all answers that apply:

(A) $(z + z) + (z + 6)$

(B) $(z + 6) + 6$

(C) $2(z + 3)$

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Which expressions are equivalent to $4(4a + 5)$?

Choose 3 answers:

(A) $16a + 5$

(B) $16a + 20$

(C) $12a + 20 + 4a$

(D) $2(8a + 10)$

(E) $16a + 5 + 4$

Answer: B, C, and D

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Which expressions are equivalent to $2r + (t + r)$?

Choose all answers that apply:

(A) $2rt + 4r$

(B) $r + t$

(C)   None of the above

Which expressions are equivalent to $2(b + 3c)$?

Choose all answers that apply:

(A) $3(b + 2c)$

(B) $(b + 3c) + (b + 3c)$

(C) $2(b) + 2(3c)$

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Which expressions are equivalent to $\dfrac{k}{2}$?

Choose 2 answers:

(A) $k - 2$

(B) $\dfrac{2}{k}$

(C) $\dfrac{1}{2}k$

(D) $k \div 2$

(E) $k + k$

Answer: C and D

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Which expressions are equivalent to $x + 2y + x + 2$?

Choose all answers that apply:

(A) $2(x + y + 1)$

(B) $2x + 4y + 4$

(C) None of the above

Which expressions are equivalent to $3x + 3(x + y)$?

Choose all answers that apply:

(A) $6x + 3y$

(B) $3(x + x + y)$

(C) $3xy$

Which expressions are equivalent to $2(4f + 2g)$?

Choose 3 answers:

$\quad$ (A) $\quad 8f + 2g$

$\quad$ (B) $\quad 2f(4 + 2g)$

$\quad$ (C) $\quad 8f + 4g$

$\quad$ (D) $\quad 4(2f + g)$

$\quad$ (E) $\quad 4f + 4f + 4g$

Answer: C, D, and E

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Which expressions are equivalent to $q + p + q + p + q$?

Choose all answers that apply:

   (A) $2p + 3q$

   (B) $2(p + q) + q$

   (C)   None of the above

Answer: A and B

Which expressions are equivalent to $4d + 6 + 2d$?

Choose all answers that apply:

   (A) $2(3d + 3)$

   (B) $6(d + 6)$

   (C) $(3d + 3) + (3d + 3)$

Answer: A and C

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Which expressions are equivalent to $(5g + 3h + 4) \cdot 2$?

Choose all answers that apply:

(A) $(5g + 3h) \cdot 8$

(B) $(5g + 3h) \cdot 6$

(C) None of the above

Answer: C

Which expressions are equivalent to $4b$?

Choose all answers that apply:

(A) $b + 2(b + 2b)$

(B) $3b + b$

(C) $2(2b)$

Answer: B and C

Which expressions are equivalent to $3(4h + 2k)$?

Choose all answers that apply:

(A) $3(2k + 4h)$

(B) $3(4k + 2h)$

(C) None of the above

Answer: A