When Do Sky Divers Use Decimals?

For each exercise, select the axiom illustrated by the given equation. (Each variable represents any real number.) CIRCLE the letter in the appropriate column next to the equation. Write this letter in the box at the bottom of the page that contains the number of that exercise.

	commutative (addition) ↓	commutative (multiplication)	associative (addition) ↓	associative (multiplication)
(1) $6 \cdot 9 = 9 \cdot 6$	P	T	U	B
(2) $7 + 15 = 15 + 7$	I	A	S	R
(3) $69 + (31 + 23) = (69 + 31) + 23$	G	V	S	L
(4) $20 \cdot (5 \cdot 17) = (20 \cdot 5) \cdot 17$	X	O	P	A
(5) $x + 2.5 = 2.5 + x$	I	H	U	W
(6) $3(n \cdot 8) = 3(8n)$	C	E	I	L
(7) $3(8n) = (3 \cdot 8)n$	M	W	E	N
(8) $11 + (w + 2) = 11 + (2 + w)$	T	V	Y	B
(9) $11 + (2 + w) = (11 + 2) + w$	I	E	A	L
(10) $(5x) + 14 = 14 + (5x)$	N	T	F	S
(11) $(x \cdot 5) + 14 = (5x) + 14$	A	I	O	T
(12) $\frac{1}{3}(9t) = \left(\frac{1}{3} \cdot 9\right)t$	E	A	N	O
(13) $7x + (4x + 1) = (7x + 4x) + 1$	A	P	U	L
(14) $3(m + 10) = 3(10 + m)$	T	S	N	R
(15) $3 + (m \cdot 10) = 3 + (10m)$	E	H	I	A
(16) $8 + (5 + k) = (8 + 5) + k$	P	K	S	H
(17) $(12a)\frac{1}{6} = (a \cdot 12)\frac{1}{6}$	S	T	B	W
(18) $(a \cdot 12)\frac{1}{6} = a\left(12 \cdot \frac{1}{6}\right)$	B	Y	E	N

2	10	4	17	6	18	8	15	3	16	11	1	13	9	14	5	12	7

Why Did the Cow Keep Jumping Over the Barrel?

Translate each phrase below into an algebraic expression and find your answer in the corresponding answer column. Write the letter of that exercise in the box that contains the number of the answer.

(E)	3 times a number	(18)	$x + 3$
(O)	3 more than a number	(15)	$3x - 8$
(S)	3 decreased by a number	(19)	$x - 3$
(R)	3 less than a number	(12)	$3x + 8$
(A)	one third of a number	(3)	$3x$
(I)	8 more than 3 times a number	(25)	$3 - x$
(N)	8 less than 3 times a number	(5)	$\frac{x}{3}$

(S)	5 times a number, increased by 8	(22)	$8(x + 5)$
(A)	5 times the sum of a number and 8	(4)	$8(2x + 5)$
(H)	5 more than 8 times a number	(2)	$8x + 5$
(O)	8 times the sum of a number and 5	(13)	$2(5x + 8)$
(C)	twice the sum of 5 times a number and 8	(6)	$5x + 8$
(T)	2 more than five eighths of a number	(20)	$5(x + 8)$
(W)	8 times the sum of twice a number and 5	(11)	$\frac{5}{8}x + 2$

(A)	7 less than 4 times a number	(1)	$7 - 4x$
(S)	7 decreased by 4 times a number	(16)	$2x - 9$
(G)	9 less than twice a number	(14)	$7x + 4$
(N)	9 decreased by twice a number	(9)	$4x - 7$
(O)	9 less than half a number	(8)	$7x + 4x$
(I)	7 times a number, increased by 4	(24)	$9 - 2x$
(R)	7 times a number, increased by 4 times the number	(27)	$\frac{x}{2} - 9$

(T)	9 meters higher than altitude x	(7)	$x + 15$
(F)	15 meters per second slower than speed x	(28)	$x + 9$
(P)	15°C hotter than temperature x	(26)	$4x - 9$
(O)	9 meters shorter than twice length x	(23)	$2x - 9$
(C)	9 years older than twice age x	(10)	$2x + 9$
(H)	\$9 cheaper than 4 times price x	(17)	$x - 15$
(M)	9 centimeters less than three fourths of length x	(21)	$\frac{3}{4}x - 9$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28