## Warm up

Oct 12

### 1. Express as a single power.

a) $6^5 \times 6^{11} \div 6^8$

b) $\dfrac{(-5)^6 \times (-5)^9}{(-5)^7 \times (-5)^5}$

### 2. Evaluate

a) $-5^2(5^4 \div 5) - 5^3$

b) $\dfrac{8^{13} \times 8^{14}}{8^{15} \times 8^9}$

## Warm up

### 1. Express as a single power.

a) $6^5 \times 6^{11} \div 6^8 = 6^{16} \div 6^8$

$= 6^8$

b) $\dfrac{(-5)^6 \times (-5)^9}{(-5)^7 \times (-5)^5} = \dfrac{(-5)^{15}}{(-5)^{12}}$

$= (-5)^3$

## 2. Evaluate

a) $-5^2(5^4 \div 5^1) - 5^3$ $= -5^2(5^3) - 5^3$

$= -5^5 - 5^3$

$= -3125 - 125$

$= -3250$

b) $\dfrac{8^{13} \times 8^{14}}{8^{15} \times 8^{9}}$ $= \dfrac{8^{27}}{8^{24}}$

$= 8^3$

$= 512$

Examples.

1. $x^5 \cdot x^3 =$

2. $x^2 \cdot x^3 =$

3 $(2x^4)^2 =$

4. $(-3x^6)^3 =$

5. $(6a^3b^2)^3$

6. $2a^2(-3a^3b)^2$

7. $-5a(-2ab^3)^3$

Examples.

1. $x^5 \cdot x^3 = x^8$

2. $x^2 \cdot x^3 = x^5$

3 $(2x^4)^2 = 4x^8$

4. $(-3x^6)^3 = -27x^{18}$

5. $(6a^3b^2)^3 = 216a^9b^6$

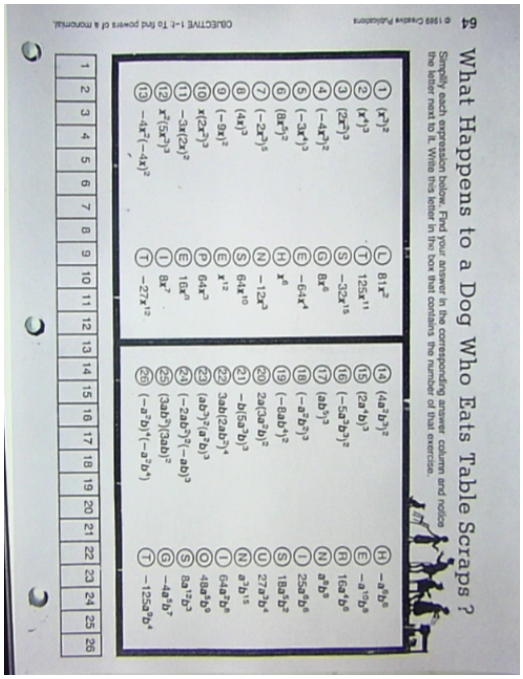
6. $2a^2(-3a^3b)^2 = 18a^8b^2$

7. $-5a(-2ab^3)^3 = 40a^4b^9$

Homework

Puzzle Worksheet using...

Product Rule & Power of a Power

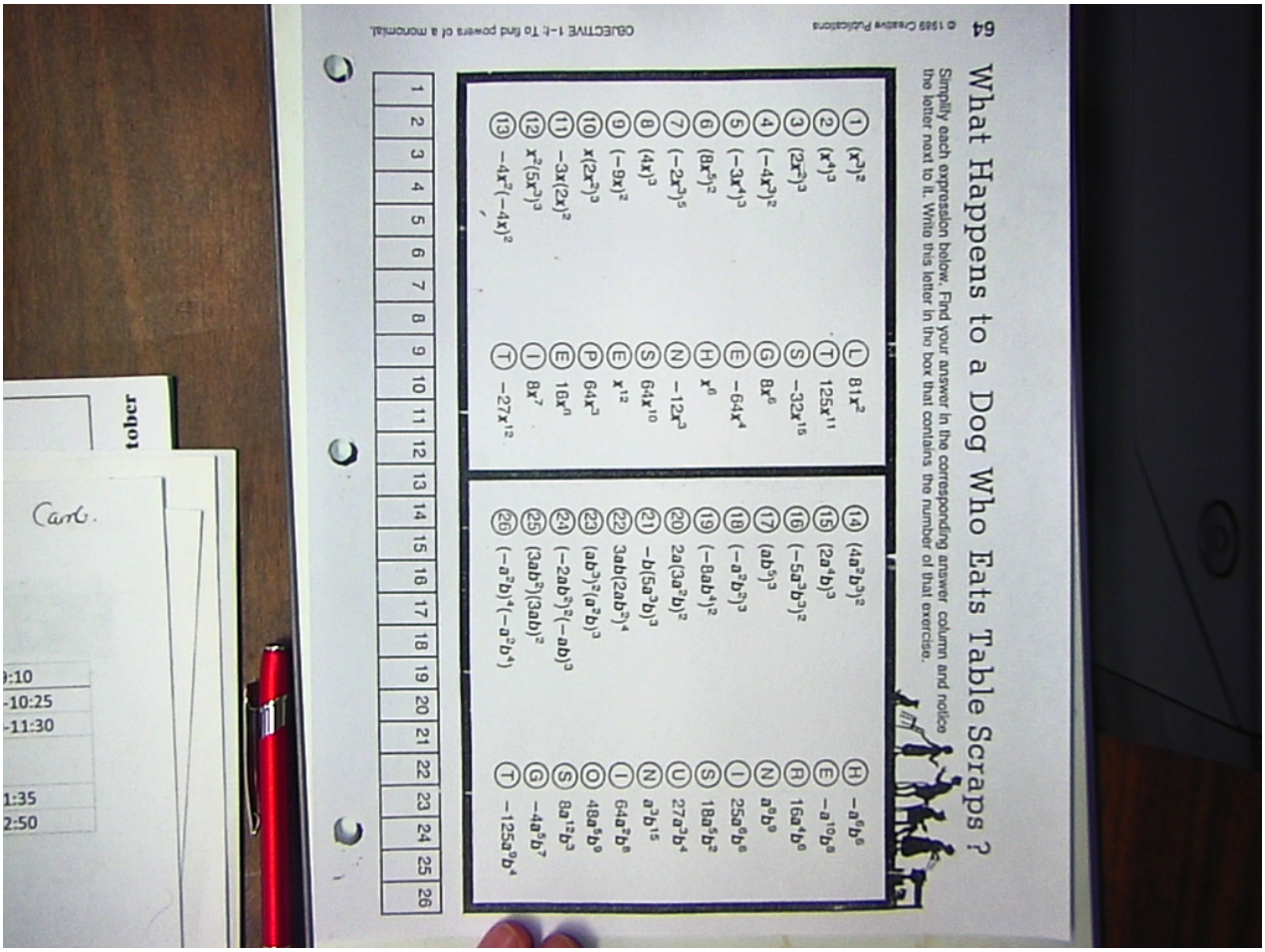


What Happens to a Dog Who Eats Table Scraps?

Simplify each expression below. Find your answer in the corresponding answer column and notice the letter next to it. Write that letter in the box that contains the number of that exercise.

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |

| | | | |
|---|---|---|---|
| (1) $(x^3)^2$ | (2) $(x^4)^3$ | (3) $(2x^5)^3$ | (4) $(-4x^2)^2$ |
| (5) $(-3x^4)^3$ | (6) $(8x^2)^2$ | (7) $(-2x^4)^5$ | (8) $(4x)^3$ |
| (9) $(-3x)^2$ | (10) $x(2x^2)^3$ | (11) $-2x(2x)^2$ | (12) $x^2(5x^2)^3$ |
| (13) $-4x^7(-4x)^2$ | (14) $81x^2$ | (15) $125x^{11}$ | (16) $-32x^{15}$ |
| (17) $8x^6$ | (18) $-64x^4$ | (19) $x^6$ | (20) $-12x^3$ |
| (21) $64x^{10}$ | (22) $x^{12}$ | (23) $64x^3$ | (24) $16x^6$ |
| (25) $8x^2$ | (26) $-27x^{12}$ | (1) $(4a^2b^3)^2$ | (2) $(2a^4b)^3$ |
| (3) $(-5a^2b^3)^2$ | (4) $(ab^2)^3$ | (5) $(-3a^2b^2)^3$ | (6) $(-8ab^2)^2$ |
| (7) $2a(3a^2b)^2$ | (8) $-b(5a^2b)^3$ | (9) $3ab(2ab^2)^4$ | (10) $(ab^2)^2(a^2b)^3$ |
| (11) $(-2ab^2)^2(-ab)^3$ | (12) $(3ab^2)(3ab)^2$ | (13) $(-a^2b)^4(-a^2b^4)$ | (14) $-a^2b^6$ |
| (15) $-a^{15}b^8$ | (16) $16a^2b^6$ | (17) $a^6b^6$ | (18) $25a^2b^6$ |
| (19) $18a^2b^2$ | (20) $27a^2b^4$ | (21) $a^7b^{15}$ | (22) $64a^7b^6$ |
| (23) $48a^2b^6$ | (24) $8a^{12}b^3$ | (25) $-4a^2b^7$ | (26) $-125a^2b^4$ |



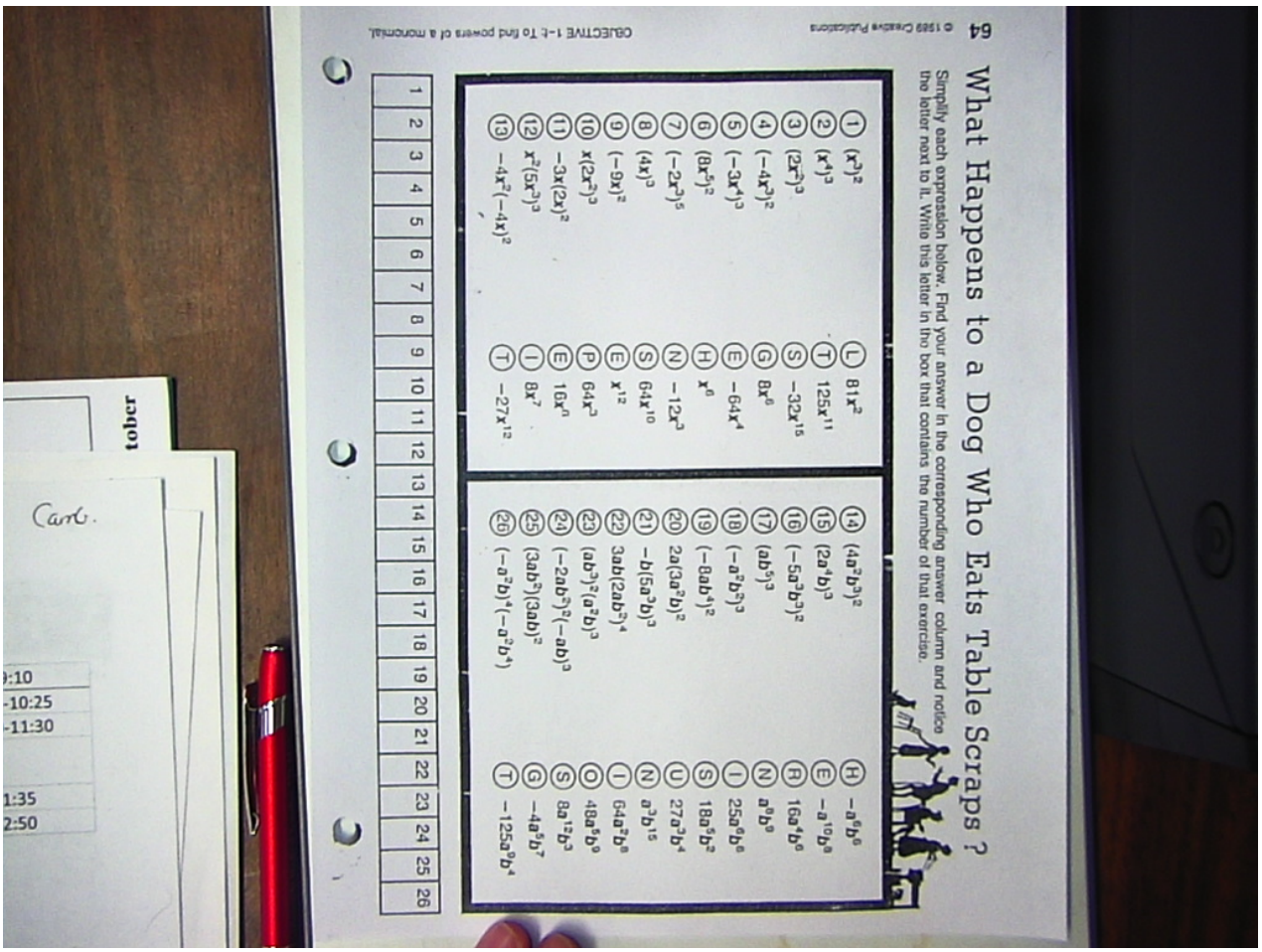
# What Happens to a Dog Who Eats Table Scraps?

Simplify each expression below. Find your answer in the corresponding answer column and notice the letter next to it. Write this letter in the box that contains the number of that exercise.

| | | | |
|---|---|---|---|
| 1 $(x^3)^2$ | L $81x^2$ | 14 $(4a^2b^3)^2$ | H $-a^6b^6$ |
| 2 $(x^4)^3$ | T $125x^{11}$ | 15 $(2a^4b)^3$ | E $-a^{10}b^8$ |
| 3 $(2x^3)^3$ | S $-32x^{15}$ | 16 $(-5a^3b^3)^2$ | R $16a^4b^6$ |
| 4 $(-4x^3)^2$ | G $8x^6$ | 17 $(ab^5)^3$ | N $a^8b^9$ |
| 5 $(-3x^4)^3$ | E $-64x^4$ | 18 $(-a^2b^3)^3$ | I $25a^6b^6$ |
| 6 $(8x^5)^2$ | H $x^6$ | 19 $(-8ab^4)^2$ | S $18a^5b^2$ |
| 7 $(-2x^3)^5$ | N $-12x^3$ | 20 $2a(3a^2b)^2$ | U $27a^3b^4$ |
| 8 $(4x)^3$ | S $64x^{10}$ | 21 $-b(5a^3b)^3$ | N $a^3b^{15}$ |
| 9 $(-9x)^2$ | E $x^{12}$ | 22 $3ab(2ab^3)^4$ | I $64a^2b^8$ |
| 10 $x(2x^3)^3$ | P $64x^3$ | 23 $(ab^3)^2(a^2b)^3$ | O $48a^5b^9$ |
| 11 $-3x(2x)^2$ | E $16x^6$ | 24 $(-2ab^3)^2(-ab)^3$ | S $8a^{12}b^3$ |
| 12 $x^2(5x^3)^3$ | I $8x^7$ | 25 $(3ab^3)(3ab)^2$ | G $-4a^5b^7$ |
| 13 $-4x^2(-4x)^2$ | T $-27x^{12}$ | 26 $(-a^2b)^4(-a^2b^4)$ | T $-125a^9b^4$ |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | |

64 © 1989 Creative Publications OBJECTIVE 1-t: To find powers of a monomial.

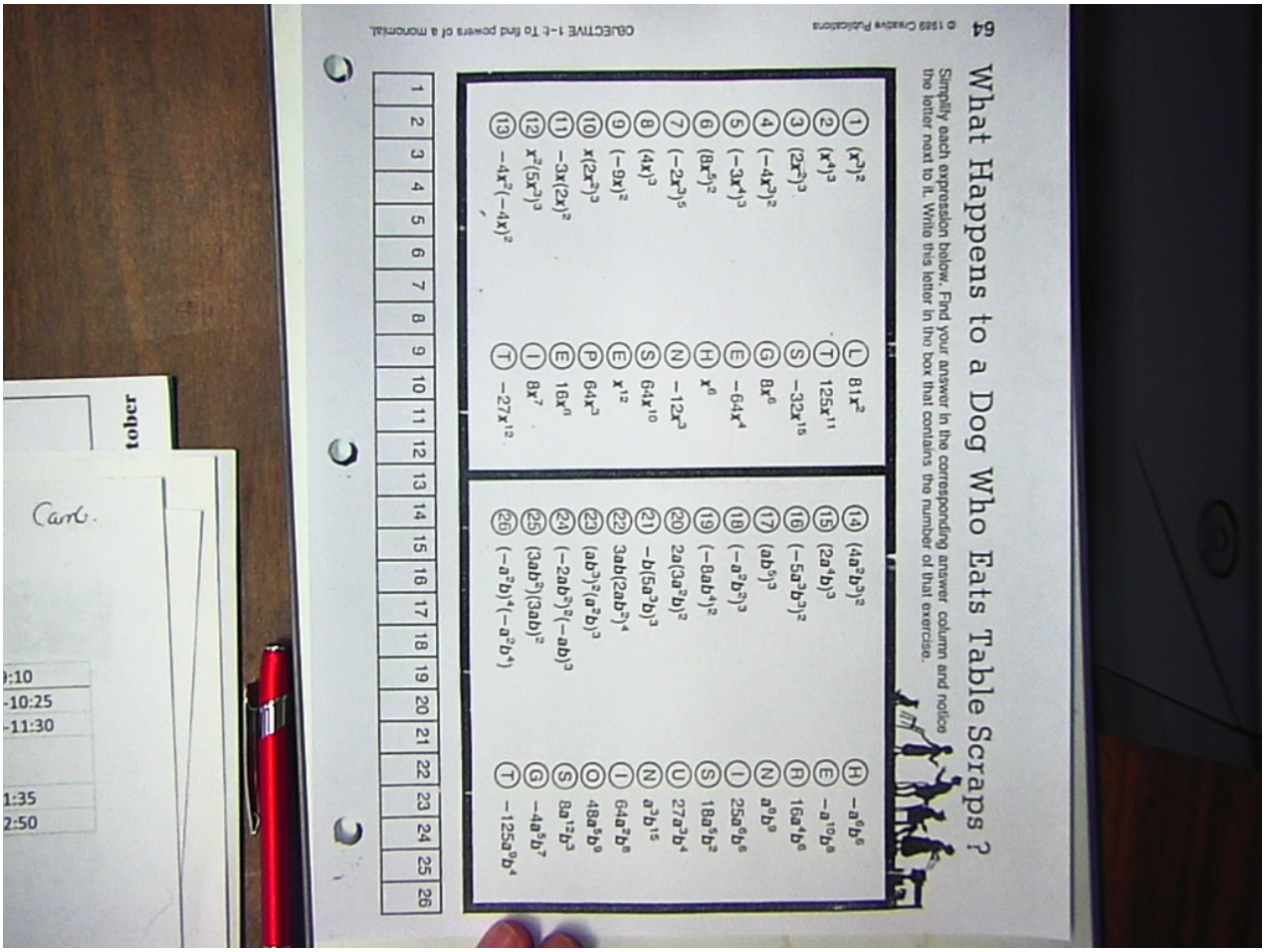
# What Happens to a Dog Who Eats Table Scraps?

Simplify each expression below. Find your answer in the corresponding answer column and notice the letter next to it. Write this letter in the box that contains the number of that exercise.

| | | | |
|---|---|---|---|
| 1 $(x^3)^2$ | L $81x^2$ | 14 $(4a^2b^3)^2$ | H $-a^6b^6$ |
| 2 $(x^4)^3$ | T $125x^{11}$ | 15 $(2a^4b)^3$ | E $-a^{10}b^8$ |
| 3 $(2x^3)^3$ | S $-32x^{15}$ | 16 $(-5a^3b^3)^2$ | R $16a^4b^6$ |
| 4 $(-4x^3)^2$ | G $8x^6$ | 17 $(ab^5)^3$ | N $a^8b^9$ |
| 5 $(-3x^4)^3$ | E $-64x^4$ | 18 $(-a^2b^3)^3$ | I $25a^6b^6$ |
| 6 $(8x^5)^2$ | H $x^6$ | 19 $(-8ab^4)^2$ | S $18a^5b^2$ |
| 7 $(-2x^3)^5$ | N $-12x^3$ | 20 $2a(3a^2b)^2$ | U $27a^3b^4$ |
| 8 $(4x)^3$ | S $64x^{10}$ | 21 $-b(5a^3b)^3$ | N $a^3b^{15}$ |
| 9 $(-9x)^2$ | E $x^{12}$ | 22 $3ab(2ab^3)^4$ | I $64a^2b^8$ |
| 10 $x(2x^3)^3$ | P $64x^3$ | 23 $(ab^3)^2(a^2b)^3$ | O $48a^5b^9$ |
| 11 $-3x(2x)^2$ | E $16x^6$ | 24 $(-2ab^3)^2(-ab)^3$ | S $8a^{12}b^3$ |
| 12 $x^2(5x^3)^3$ | I $8x^7$ | 25 $(3ab^3)(3ab)^2$ | G $-4a^5b^7$ |
| 13 $-4x^2(-4x)^2$ | T $-27x^{12}$ | 26 $(-a^2b)^4(-a^2b^4)$ | T $-125a^9b^4$ |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

64 © 1989 Creative Publications OBJECTIVE 1-t: To find powers of a monomial.



64 © 1989 Creative Publications OBJECTIVE 1-f: To find powers of a monomial.

# What Happens to a Dog Who Eats Table Scraps?

Simplify each expression below. Find your answer in the corresponding answer column and notice the letter next to it. Write this letter in the box that contains the number of that exercise.

| | | | | | |
|---|---|---|---|---|---|
| 1 | $(x^3)^2$ | L | $81x^2$ | 14 | $(4a^2b^3)^2$ | H | $-a^6b^6$ |
| 2 | $(x^4)^3$ | T | $125x^{11}$ | 15 | $(2a^4b)^3$ | E | $-a^{10}b^8$ |
| 3 | $(2x^5)^3$ | S | $-32x^{15}$ | 16 | $(-5a^3b^2)^2$ | R | $16a^4b^6$ |
| 4 | $(-4x^3)^2$ | G | $8x^6$ | 17 | $(ab^5)^3$ | N | $a^9b^9$ |
| 5 | $(-3x^4)^3$ | E | $-64x^4$ | 18 | $(-a^2b^3)^3$ | I | $25a^6b^6$ |
| 6 | $(8x^5)^2$ | H | $x^6$ | 19 | $(-8ab^4)^2$ | S | $18a^5b^2$ |
| 7 | $(-2x^3)^5$ | N | $-12x^3$ | 20 | $2a(3a^2b)^2$ | U | $27a^3b^4$ |
| 8 | $(4x)^3$ | S | $64x^{10}$ | 21 | $-b(5a^3b)^3$ | N | $a^3b^{15}$ |
| 9 | $(-9x)^2$ | E | $x^{12}$ | 22 | $3ab(2ab^3)^4$ | I | $64a^2b^8$ |
| 10 | $x(2x^3)^3$ | P | $64x^3$ | 23 | $(ab^3)^2(a^2b)^3$ | O | $48a^5b^9$ |
| 11 | $-3x(2x)^2$ | E | $16x^6$ | 24 | $(-2ab^3)^2(-ab)^3$ | S | $8a^{12}b^3$ |
| 12 | $x^2(5x^3)^3$ | I | $8x^7$ | 25 | $(3ab^3)(3ab)^2$ | G | $-4a^5b^7$ |
| 13 | $-4x^2(-4x)^2$ | T | $-27x^{12}$ | 26 | $(-a^2b)^4(-a^2b^4)$ | T | $-125a^3b^4$ |

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | |