Module 3, Topic 1

# Expressions

## I. A.

**1.** 6
**2.** 29
**3.** 0
**4.** 4
**5.** 19
**6.** 145
**7.** 19
**8.** 6
**9.** 7
**10.** 42
**11.** 1
**12.** 18

## I. B.

**1.** 1
**2.** 12
**3.** 9
**4.** 18
**5.** 17
**6.** 13
**7.** 7
**8.** 25
**9.** 24
**10.** 30
**11.** 19
**12.** 11

## I. C.

**1.** $5 \times 5$
**2.** $7 \times 7 \times 7$
**3.** $4 \times 4 \times 4 \times 4 \times 4$
**4.** $3 \times 3$
**5.** $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$
**6.** $8 \times 8 \times 8$
**7.** $6 \times 6 \times 6 \times 6$
**8.** $9 \times 9 \times 9 \times 9 \times 9 \times 9 \times 9$
**9.** $1 \times 1 \times 1 \times 1 \times 1 \times 1$
**10.** $10 \times 10 \times 10$

## I. D.

**1.** 48
**2.** 25
**3.** 9
**4.** 36
**5.** 2
**6.** 10
**7.** 16
**8.** 47
**9.** 35
**10.** 10
**11.** 25
**12.** 7
**13.** 18
**14.** 17
**15.** 10
**16.** 65

## II. A.

**1.** 20.8 ft
**2.** 25.6 ft
**3.** 2.8 goals per game
**4.** $409.50
**5.** 141.135 square inches
**6.** 31.2 square feet
**7.** $90.60
**8.** $37.80
**9.** 32.7 square miles
**10.** 6.716667 yards per second

## III. A.

**1.** Seth will have $1 left.
**2.** The volume of the pyramid container is 166.87 cubic inches.
**3.** Oscar scored 33 points.
**4.** The total cost is $71.40.
**5.** Ethan's total refund is $1.25.
**6.** The community area will have 73 trees.
**7.** There were 37.77 tons of tires collected.
**8.** Orpheus lost his stuff 14 times.
**9.** The estimated volume of the cone is 624.9375 cubic meters.
**10.** Mako's team earned 21 points.

## IV. A.

**1.** $y + y + x + x + x + y$
**2.** $x^2 + 1 + x^2 + x^2 + x + x$
**3.** $xy + xy + x + y + y + x$
**4.** $x + x + 1 + xy + y + y + 1$
**5.** $x^2 + x^2 + y + x^2 + xy + x^2$
**6.** $1 + 1 + 1 + x + x + 1 + y + x$

## IV. B.

**1.** $x + y + x + x + x = 4x + y$
**2.** $y + y + y + 1 + y + y + 1 + 1 + 1 = 5y + 4$
**3.** $x + x + x^2 + x^2 + 1 + 1 + 1 = 2x^2 + 2x + 3$
**4.** $1 + 1 + 1 + xy + x^2 + xy = x^2 + 2xy + 3$
**5.** $x + x + 1 + y + y + x = 3x + 2y + 1$
**6.** $xy + xy + 1 + 1 + 1 + xy + xy = 4xy + 3$

## V. A.

**1.** $4(3x + 1)$
**2.** $2(x + 3)$
**3.** $3(3x + 5)$
**4.** $4(2x)$
**5.** $2(x^2 + x)$
**6.** $3(3xy + 5y)$

## V. B.

**1.** $8x$
**2.** $15x + 6$
**3.** $10x + 10$
**4.** $10y$
**5.** $2x^2 + 2x$
**6.** $6xy + 10y$
**7.** $48xy$
**8.** $14y + 21$
**9.** $24xy + 40y$
**10.** $10y^2 + 35$
**11.** $12x + 27y$
**12.** $2x^2 + 16xy + 2y^2$

## V. C.

**1.** $2(2x + 1)$
**2.** $4(3x + 2)$
**3.** $5(2 + 3x)$
**4.** $3(4 + 3x)$
**5.** $6(3x + 2)$
**6.** $4(8 + 5x)$
**7.** $6(9 + 4x)$
**8.** $3(12x + 7)$
**9.** $3(x + 10)$
**10.** $11(8 + 5x)$
**11.** $25(x + 4)$
**12.** $16(1 + 3x)$

## VI. A.

**1.** $3x + 29$
**2.** $11x + 5$
**3.** $18x + 21$
**4.** $9x + 1$
**5.** $2x + 0.375$
**6.** $28x$
**7.** $28x$
**8.** $3x$
**9.** $74 + 32x$
**10.** $9x + 1.67$
**11.** $0.375x + 22$
**12.** $18x$

## VII. A.

**1.**

| Time in Circulation (months) | Time Remaining in Lifespan (months) |
|---|---|
| 9 | 12 |
| 15 | 6 |
| 20 | 1 |

Let $m$ represent the number of months the $1 bill is in circulation. Then $21 - m$ represents the months remaining in its lifespan.

**2.**

| Time Painting (months) | Number of Paintings |
|---|---|
| 6 | 20 |
| 9 | 23 |
| 10 | 24 |

Let $m$ represent the number of months Enrique paints. Then $m + 14$ represents the number of paintings in his collection.

**3.**

| Time Feeding Horse (days) | Hay Feed to Horse (pounds) |
|---|---|
| 3 | 30 |
| 7 | 70 |
| 23 | 230 |

Let $d$ represent the number of days Matthew feeds his horse. Then $10d$ represents the pounds of hay Matthew fed his horse.

**4.**

| Shoe Size | Number of Boxes |
|---|---|
| 5 | 13 |
| 9 | 17 |
| 11 | 19 |

Let $s$ represent shoe size. Then $s + 8$ represents the number of boxes delivered for that shoe size.

**5.**

| Large Jerseys | Medium Jerseys |
|---|---|
| 7 | 14 |
| 10 | 17 |
| 15 | 22 |

Let $l$ represent the number of large jerseys ordered. Then $l + 7$ represents the number of medium jerseys ordered.

**6.**

| Songs on Gift Card | Songs Left |
|---|---|
| 19 | 16 |
| 17 | 14 |
| 12 | 9 |

Let $s$ represent the number of songs initially on the gift card. Then $s - 3$ represents the number of songs remaining.

**7.**

| Number of Schools | Number of Scholarships |
|---|---|
| 6 | 72 |
| 8 | 96 |
| 13 | 156 |

Let $s$ represent the number of schools. Then $12s$ represents the number of scholarships.

**8.**

| Time Adding Turbines (months) | Number of Turbines |
|---|---|
| 12 | 27 |
| 24 | 39 |
| 48 | 63 |

Let $m$ represent the number of months adding turbines. Then $t + 15$ represents the total number of turbines.

**9.**

| Time Worked (days) | Rooms Cleaned |
|---|---|
| 5 | 125 |
| 30 | 750 |
| 40 | 1000 |

Let $d$ represent the number of days worked. The $25d$ represents the number of rooms cleaned.

**10.**

| Belita's Money (dollars) | Lucy's Money (dollars) |
|---|---|
| 75 | 61 |
| 68 | 54 |
| 54 | 40 |

Let $b$ represent Belita's money in dollars. Then $b - 14$ represents Lucy's money in dollars.

**11.**

| Time Raining (days) | Depth of Water (inches) |
|---|---|
| 7 | 50 |
| 14 | 57 |
| 21 | 64 |

Let $d$ represent the number of days it rains. Then $d + 43$ represents the depth of the water in inches.

**12.**

| Number of Shares | Cost (dollars) |
|---|---|
| 6 | 126 |
| 10 | 210 |
| 13 | 273 |

Let $s$ represent the number of shares. Then $21s$ represents the cost of the shares in dollars.