Modeling and Word-Problem Translation

Turning contexts into equations, inequalities, tables, and graphs.

Name _____ Date _____

32 main · 2-up grid · 11 pages · visible side quests

Completion Reward

Shown here as a small pack artifact, not a preview destination.

1. Which variable definition is best for a ticket problem?

A. Let x be the number of tickets sold.
B. Let x be the answer and the question at the same time.
C. Do not define a variable.
D. Let x be the ticket price and the ticket count simultaneously.

1.1. A ticket problem asks for the number of adult tickets. Which variable definition is best?

A. x = total cost
B. a = number of adult tickets
C. t = ticket price
D. y = student age

1.2. If x stands for number of boxes, then x = 6 means:

A. $6 total
B. 6 boxes
C. 6 dollars per box
D. the box size is 6

1.3. A notebook problem is about buying packs. Which variable is most useful?

A. c = total cost
B. p = number of packs
C. d = discount
D. n = notebook color

1.4. A student lets x be the number of boxes but later says x = 12 means $12. What went wrong?

A. they changed the variable meaning
B. they solved incorrectly
C. they used the wrong operation
D. nothing

1.5. In a cost model, the independent variable is often:

A. the final total
B. the quantity being chosen or counted
C. the y-intercept only
D. the graph scale

2. If x represents the number of tickets sold, which answer is not reasonable?

A. -2.5
B. 12
C. 0
D. 18

2.1. If x is the number of tickets sold, which answer is not reasonable?

A. 8
B. 12
C. -3
D. 20

2.2. If y = 12x + 3 gives movie-ticket cost and x = 4, then y = 51 means:

A. 51 tickets
B. $51 total cost
C. $51 per ticket
D. 51 days

2.3. A babysitter charges $12 per hour plus an $8 fee. If the total is $44, how many hours were worked?

A. 2
B. 3
C. 4
D. 5

2.4. A tank starts with 70 gallons and drains 5 gallons per minute. After how many minutes will it reach 20 gallons?

A. 5
B. 8
C. 10
D. 12

2.5. If a word problem gives 12 tickets total, which answer is most reasonable for student tickets sold?

A. 4.5
B. -1
C. 7
D. 18

3. A problem is about buying packs of notebooks. Which variable definition is best?

A. Let p be the price of one notebook and the number of packs at the same time.
B. Let n be the word notebook.
C. Let p be the number of packs of notebooks.
D. Let x be the answer with no units in mind.

3.1. A ticket problem asks for the number of adult tickets. Which variable definition is best?

A. x = total cost
B. a = number of adult tickets
C. t = ticket price
D. y = student age

3.2. If x stands for number of boxes, then x = 6 means:

A. $6 total
B. 6 boxes
C. 6 dollars per box
D. the box size is 6

3.3. A notebook problem is about buying packs. Which variable is most useful?

A. c = total cost
B. p = number of packs
C. d = discount
D. n = notebook color

3.4. A student lets x be the number of boxes but later says x = 12 means $12. What went wrong?

A. they changed the variable meaning
B. they solved incorrectly
C. they used the wrong operation
D. nothing

3.5. In a cost model, the independent variable is often:

A. the final total
B. the quantity being chosen or counted
C. the y-intercept only
D. the graph scale

4. Which equation matches the sentence Three fewer than twice x is 11?

A. 3x - 2 = 11
B. 2(x - 3) = 11
C. x - 3 = 22
D. 2x - 3 = 11

4.1. Which expression means 8 less than 3x?

A. 8 - 3x
B. 3x - 8
C. 8x - 3
D. 3(x - 8)

4.2. Which equation matches 'Three fewer than twice x is 11'?

A. 2x - 3 = 11
B. 3 - 2x = 11
C. 2(x - 3) = 11
D. 2x + 3 = 11

4.3. Which expression means 5 more than x?

A. 5x
B. x - 5
C. x + 5
D. 5 - x

4.4. Which expression means twice a number n?

A. n + 2
B. 2n
C. n / 2
D. n - 2

4.5. A phrase says '7 fewer than y'. Which expression fits?

A. y - 7
B. 7 - y
C. 7y
D. y + 7

5. Which expression means 8 less than 3x?

A. 8 - 3x
B. 3(x - 8)
C. 8x - 3
D. 3x - 8

5.1. Which expression means 8 less than 3x?

A. 8 - 3x
B. 3x - 8
C. 8x - 3
D. 3(x - 8)

5.2. Which equation matches 'Three fewer than twice x is 11'?

A. 2x - 3 = 11
B. 3 - 2x = 11
C. 2(x - 3) = 11
D. 2x + 3 = 11

5.3. Which expression means 5 more than x?

A. 5x
B. x - 5
C. x + 5
D. 5 - x

5.4. Which expression means twice a number n?

A. n + 2
B. 2n
C. n / 2
D. n - 2

5.5. A phrase says '7 fewer than y'. Which expression fits?

A. y - 7
B. 7 - y
C. 7y
D. y + 7

6. A student lets x be the number of boxes but then solves for x and interprets it as the cost in dollars. What is wrong?

A. Variables are not allowed in word problems.
B. x should always mean dollars.
C. The interpretation does not match the variable definition.
D. The answer should be squared first.

6.1. A ticket problem asks for the number of adult tickets. Which variable definition is best?

A. x = total cost
B. a = number of adult tickets
C. t = ticket price
D. y = student age

6.2. If x stands for number of boxes, then x = 6 means:

A. $6 total
B. 6 boxes
C. 6 dollars per box
D. the box size is 6

6.3. A notebook problem is about buying packs. Which variable is most useful?

A. c = total cost
B. p = number of packs
C. d = discount
D. n = notebook color

6.4. A student lets x be the number of boxes but later says x = 12 means $12. What went wrong?

A. they changed the variable meaning
B. they solved incorrectly
C. they used the wrong operation
D. nothing

6.5. In a cost model, the independent variable is often:

A. the final total
B. the quantity being chosen or counted
C. the y-intercept only
D. the graph scale

7. Which family best models the height of a ball thrown upward over time?

A. Linear
B. Exponential
C. Quadratic
D. Constant

7.1. Which situation is best modeled by a linear relationship?

A. a value doubles each day
B. a cost increases by $4 each week
C. a ball rises then falls
D. a bacteria culture triples hourly

7.2. Which situation is best modeled by a quadratic relationship?

A. a ball thrown upward
B. a parking fee with a flat start
C. a bank fee per month
D. a population that doubles

7.3. Which situation suggests exponential growth?

A. gains 3 inches each week
B. doubles every day
C. has a one-time fee
D. stays constant

7.4. Which situation suggests exponential decay?

A. loses the same percent each year
B. loses $5 each year
C. gains 2 items each hour
D. stays on a straight line

7.5. A student picks a linear model for a quantity that triples each hour. What is wrong?

A. tripling is multiplicative, not additive
B. linear models are always wrong
C. the quantity must be quadratic
D. tripling means subtract 3

8. If s is the side length of a square, which equation gives its area A?

A. A = 4s
B. A = 2s
C. A = s + s
D. A = s^2

8.1. When modeling the cost of x movie tickets, what should x represent?

A. the total cost
B. the number of tickets
C. the ticket price only
D. the starting fee

8.2. Which equation matches 'a $12 fee plus $5 per hour'?

A. y = 12x + 5
B. y = 5x + 12
C. y = 17x
D. y = 12 + 5

8.3. A model predicts -4 tickets sold. Why is that unreasonable?

A. Models can never be wrong
B. Ticket counts cannot be negative
C. The slope must be positive
D. A line cannot cross the axis

8.4. If x = 6 solves a ticket model, what does x = 6 usually mean?

A. the cost is $6
B. 6 tickets
C. the model has slope 6
D. the y-intercept is 6

8.5. A quantity doubles every month. Which model family fits best?

A. linear
B. quadratic
C. exponential
D. constant

9. A gym charges a $25 sign-up fee and $15 each month. Which equation models the total cost C after m months?

A. C = 15 + 25m
B. C = 25m
C. C = 40m
D. C = 25 + 15m

9.1. A gym charges a $25 sign-up fee and $15 each month. Which equation models total cost C after m months?

A. C = 25m + 15
B. C = 15m + 25
C. C = 40m
D. C = 25 + 15

9.2. A parking garage charges $6 to enter plus $2 per hour. Which model gives total cost y after x hours?

A. y = 6x + 2
B. y = 2x + 6
C. y = 8x
D. y = 6 + 2

9.3. A candle is 18 cm tall and burns down 2 cm each hour. Which equation gives height h after t hours?

A. h = 18 + 2t
B. h = 2t - 18
C. h = 18 - 2t
D. h = 16t

9.4. In y = 12x + 3 for movie-ticket cost, the 12 means:

A. the booking fee
B. the cost per ticket
C. the number of tickets
D. the total when x = 0

9.5. In a plan-cost model y = 9 + 3x, the 9 usually means:

A. cost per movie
B. starting fee
C. number of movies
D. the slope sign

10. Which situation is best modeled by a quadratic relationship?

A. The cost of 4 notebooks at $2 each
B. The total after adding 5 each week
C. The height after halving each hour
D. The area of a square as a function of its side length

10.1. Which situation is best modeled by a linear relationship?

A. a value doubles each day
B. a cost increases by $4 each week
C. a ball rises then falls
D. a bacteria culture triples hourly

10.2. Which situation is best modeled by a quadratic relationship?

A. a ball thrown upward
B. a parking fee with a flat start
C. a bank fee per month
D. a population that doubles

10.3. Which situation suggests exponential growth?

A. gains 3 inches each week
B. doubles every day
C. has a one-time fee
D. stays constant

10.4. Which situation suggests exponential decay?

A. loses the same percent each year
B. loses $5 each year
C. gains 2 items each hour
D. stays on a straight line

10.5. A student picks a linear model for a quantity that triples each hour. What is wrong?

A. tripling is multiplicative, not additive
B. linear models are always wrong
C. the quantity must be quadratic
D. tripling means subtract 3

11. A bacteria culture starts at 50 and triples each hour. Which equation models the amount y after h hours?

A. y = 50(3^h)
B. y = 50 + 3h
C. y = 3(50^h)
D. y = 150h

11.1. A bacteria culture starts at 12 and doubles each day. Which model fits?

A. y = 12 + 2x
B. y = 12(2)^x
C. y = 2(12)^x
D. y = 24x

11.2. A culture starts at 50 and triples each hour. Which model fits?

A. y = 50(3)^h
B. y = 3h + 50
C. y = 150h
D. y = 3(50)^h

11.3. A medicine dose is cut in half every 6 hours. Which feature belongs in the model?

A. growth factor 2
B. decay factor 1/2
C. slope -1/2
D. intercept 6

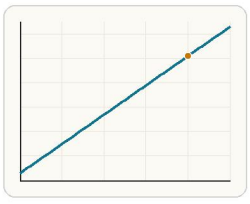
11.4. A quantity grows by 20% each step. Which factor belongs?

A. 0.2
B. 1.2
C. 20
D. 2.0

11.5. A value keeps 80% of itself each year. Which factor belongs?

A. 1.8
B. 0.8
C. 0.2
D. 80

12. If y = 12x + 3 gives the total movie-ticket cost and x = 4, what does y = 51 mean?



The point at x = 4 shows the total cost for 4 tickets.

A. The ticket price is $51 each
B. There are 51 tickets
C. The booking fee is $51
D. The total cost for 4 tickets is $51

12.1. If x is the number of tickets sold, which answer is not reasonable?

A. 8
B. 12
C. -3
D. 20

12.2. If y = 12x + 3 gives movie-ticket cost and x = 4, then y = 51 means:

A. 51 tickets
B. $51 total cost
C. $51 per ticket
D. 51 days

12.3. A babysitter charges $12 per hour plus an $8 fee. If the total is $44, how many hours were worked?

A. 2
B. 3
C. 4
D. 5

12.4. A tank starts with 70 gallons and drains 5 gallons per minute. After how many minutes will it reach 20 gallons?

A. 5
B. 8
C. 10
D. 12

12.5. If a word problem gives 12 tickets total, which answer is most reasonable for student tickets sold?

A. 4.5
B. -1
C. 7
D. 18

13. A student chooses an exponential model for a cost that increases by $4 each week. What is wrong?

A. Exponential models are always better than linear ones.
B. Weekly changes can never be modeled.
C. The situation should be quadratic instead.
D. A constant increase fits a linear model, not an exponential model.

13.1. Which situation is best modeled by a linear relationship?

A. a value doubles each day
B. a cost increases by $4 each week
C. a ball rises then falls
D. a bacteria culture triples hourly

13.2. Which situation is best modeled by a quadratic relationship?

A. a ball thrown upward
B. a parking fee with a flat start
C. a bank fee per month
D. a population that doubles

13.3. Which situation suggests exponential growth?

A. gains 3 inches each week
B. doubles every day
C. has a one-time fee
D. stays constant

13.4. Which situation suggests exponential decay?

A. loses the same percent each year
B. loses $5 each year
C. gains 2 items each hour
D. stays on a straight line

13.5. A student picks a linear model for a quantity that triples each hour. What is wrong?

A. tripling is multiplicative, not additive
B. linear models are always wrong
C. the quantity must be quadratic
D. tripling means subtract 3

14. A student picks a linear model for a population that doubles each year just because the problem uses the word grows. What is wrong?

A. Any growth must be linear
B. Population problems can never use functions
C. Doubling each year is multiplicative, so the model should be exponential
D. Nothing is wrong

14.1. Which situation is best modeled by a linear relationship?

A. a value doubles each day
B. a cost increases by $4 each week
C. a ball rises then falls
D. a bacteria culture triples hourly

14.2. Which situation is best modeled by a quadratic relationship?

A. a ball thrown upward
B. a parking fee with a flat start
C. a bank fee per month
D. a population that doubles

14.3. Which situation suggests exponential growth?

A. gains 3 inches each week
B. doubles every day
C. has a one-time fee
D. stays constant

14.4. Which situation suggests exponential decay?

A. loses the same percent each year
B. loses $5 each year
C. gains 2 items each hour
D. stays on a straight line

14.5. A student picks a linear model for a quantity that triples each hour. What is wrong?

A. tripling is multiplicative, not additive
B. linear models are always wrong
C. the quantity must be quadratic
D. tripling means subtract 3

15. A student solves a ticket problem and gets -3 tickets. What is the issue?

A. The result is mathematically possible but not reasonable in context
B. Negative answers are always the best answers
C. Tickets must be fractions
D. There is no issue

15.1. If x is the number of tickets sold, which answer is not reasonable?

A. 8
B. 12
C. -3
D. 20

15.2. If y = 12x + 3 gives movie-ticket cost and x = 4, then y = 51 means:

A. 51 tickets
B. $51 total cost
C. $51 per ticket
D. 51 days

15.3. A babysitter charges $12 per hour plus an $8 fee. If the total is $44, how many hours were worked?

A. 2
B. 3
C. 4
D. 5

15.4. A tank starts with 70 gallons and drains 5 gallons per minute. After how many minutes will it reach 20 gallons?

A. 5
B. 8
C. 10
D. 12

15.5. If a word problem gives 12 tickets total, which answer is most reasonable for student tickets sold?

A. 4.5
B. -1
C. 7
D. 18

16. A streaming plan costs $9 plus $3 per movie. If the total is $24, how many movies were watched? Answer with a number.

16.1. If x is the number of tickets sold, which answer is not reasonable?

A. 8
B. 12
C. -3
D. 20

16.2. If y = 12x + 3 gives movie-ticket cost and x = 4, then y = 51 means:

A. 51 tickets
B. $51 total cost
C. $51 per ticket
D. 51 days

16.3. A babysitter charges $12 per hour plus an $8 fee. If the total is $44, how many hours were worked?

A. 2
B. 3
C. 4
D. 5

16.4. A tank starts with 70 gallons and drains 5 gallons per minute. After how many minutes will it reach 20 gallons?

A. 5
B. 8
C. 10
D. 12

16.5. If a word problem gives 12 tickets total, which answer is most reasonable for student tickets sold?

A. 4.5
B. -1
C. 7
D. 18

17. A tank starts with 70 gallons and drains 5 gallons per minute. After how many minutes will it reach 20 gallons? Answer with a number.

17.1. If x is the number of tickets sold, which answer is not reasonable?

A. 8
B. 12
C. -3
D. 20

17.2. If y = 12x + 3 gives movie-ticket cost and x = 4, then y = 51 means:

A. 51 tickets
B. $51 total cost
C. $51 per ticket
D. 51 days

17.3. A babysitter charges $12 per hour plus an $8 fee. If the total is $44, how many hours were worked?

A. 2
B. 3
C. 4
D. 5

17.4. A tank starts with 70 gallons and drains 5 gallons per minute. After how many minutes will it reach 20 gallons?

A. 5
B. 8
C. 10
D. 12

17.5. If a word problem gives 12 tickets total, which answer is most reasonable for student tickets sold?

A. 4.5
B. -1
C. 7
D. 18

18. A babysitter charges $12 per hour plus an $8 travel fee. If the total bill is $44, how many hours did the babysitter work? Answer with a number.

18.1. A gym charges a $25 sign-up fee and $15 each month. Which equation models total cost C after m months?

A. C = 25m + 15
B. C = 15m + 25
C. C = 40m
D. C = 25 + 15

18.2. A parking garage charges $6 to enter plus $2 per hour. Which model gives total cost y after x hours?

A. y = 6x + 2
B. y = 2x + 6
C. y = 8x
D. y = 6 + 2

18.3. A candle is 18 cm tall and burns down 2 cm each hour. Which equation gives height h after t hours?

A. h = 18 + 2t
B. h = 2t - 18
C. h = 18 - 2t
D. h = 16t

18.4. In y = 12x + 3 for movie-ticket cost, the 12 means:

A. the booking fee
B. the cost per ticket
C. the number of tickets
D. the total when x = 0

18.5. In a plan-cost model y = 9 + 3x, the 9 usually means:

A. cost per movie
B. starting fee
C. number of movies
D. the slope sign

19. A runner is 10 miles from home and moves toward home at 0.5 mile per minute. What is the distance from home after 6 minutes? Answer with a number.

19.1. If x is the number of tickets sold, which answer is not reasonable?

A. 8
B. 12
C. -3
D. 20

19.2. If y = 12x + 3 gives movie-ticket cost and x = 4, then y = 51 means:

A. 51 tickets
B. $51 total cost
C. $51 per ticket
D. 51 days

19.3. A babysitter charges $12 per hour plus an $8 fee. If the total is $44, how many hours were worked?

A. 2
B. 3
C. 4
D. 5

19.4. A tank starts with 70 gallons and drains 5 gallons per minute. After how many minutes will it reach 20 gallons?

A. 5
B. 8
C. 10
D. 12

19.5. If a word problem gives 12 tickets total, which answer is most reasonable for student tickets sold?

A. 4.5
B. -1
C. 7
D. 18

20. Which answer is most reasonable for the number of student tickets sold if 12 tickets were sold total?

A. 8.5 tickets
B. 4 tickets
C. -2 tickets
D. 40 tickets

20.1. If x is the number of tickets sold, which answer is not reasonable?

A. 8
B. 12
C. -3
D. 20

20.2. If y = 12x + 3 gives movie-ticket cost and x = 4, then y = 51 means:

A. 51 tickets
B. $51 total cost
C. $51 per ticket
D. 51 days

20.3. A babysitter charges $12 per hour plus an $8 fee. If the total is $44, how many hours were worked?

A. 2
B. 3
C. 4
D. 5

20.4. A tank starts with 70 gallons and drains 5 gallons per minute. After how many minutes will it reach 20 gallons?

A. 5
B. 8
C. 10
D. 12

20.5. If a word problem gives 12 tickets total, which answer is most reasonable for student tickets sold?

A. 4.5
B. -1
C. 7
D. 18

21. What does the slope mean in this situation?

The line starts at $25 and rises by $15 each hour.

A. $25 per hour
B. The ride starts at $15
C. $15 per hour
D. The ride lasts 25 hours

21.1. When modeling the cost of x movie tickets, what should x represent?

A. the total cost
B. the number of tickets
C. the ticket price only
D. the starting fee

21.2. Which equation matches 'a $12 fee plus $5 per hour'?

A. y = 12x + 5
B. y = 5x + 12
C. y = 17x
D. y = 12 + 5

21.3. A model predicts -4 tickets sold. Why is that unreasonable?

A. Models can never be wrong
B. Ticket counts cannot be negative
C. The slope must be positive
D. A line cannot cross the axis

21.4. If x = 6 solves a ticket model, what does x = 6 usually mean?

A. the cost is $6
B. 6 tickets
C. the model has slope 6
D. the y-intercept is 6

21.5. A quantity doubles every month. Which model family fits best?

A. linear
B. quadratic
C. exponential
D. constant

22. A car loses the same percent of its value each year. Which family best models the value?

A. Linear growth
B. Quadratic
C. Exponential decay
D. Constant

22.1. Which situation is best modeled by a linear relationship?

A. a value doubles each day
B. a cost increases by $4 each week
C. a ball rises then falls
D. a bacteria culture triples hourly

22.2. Which situation is best modeled by a quadratic relationship?

A. a ball thrown upward
B. a parking fee with a flat start
C. a bank fee per month
D. a population that doubles

22.3. Which situation suggests exponential growth?

A. gains 3 inches each week
B. doubles every day
C. has a one-time fee
D. stays constant

22.4. Which situation suggests exponential decay?

A. loses the same percent each year
B. loses $5 each year
C. gains 2 items each hour
D. stays on a straight line

22.5. A student picks a linear model for a quantity that triples each hour. What is wrong?

A. tripling is multiplicative, not additive
B. linear models are always wrong
C. the quantity must be quadratic
D. tripling means subtract 3

23. A medicine dose is cut in half every 6 hours. Which family best models the amount remaining?

A. Exponential decay
B. Linear
C. Quadratic
D. Constant

23.1. Which situation is best modeled by a linear relationship?

A. a value doubles each day
B. a cost increases by $4 each week
C. a ball rises then falls
D. a bacteria culture triples hourly

23.2. Which situation is best modeled by a quadratic relationship?

A. a ball thrown upward
B. a parking fee with a flat start
C. a bank fee per month
D. a population that doubles

23.3. Which situation suggests exponential growth?

A. gains 3 inches each week
B. doubles every day
C. has a one-time fee
D. stays constant

23.4. Which situation suggests exponential decay?

A. loses the same percent each year
B. loses $5 each year
C. gains 2 items each hour
D. stays on a straight line

23.5. A student picks a linear model for a quantity that triples each hour. What is wrong?

A. tripling is multiplicative, not additive
B. linear models are always wrong
C. the quantity must be quadratic
D. tripling means subtract 3

24. A rectangular garden is 4 feet longer than it is wide. If the width is w, which expression gives the area?

A. 2w + 4
B. w + 4
C. 4w
D. w(w + 4)

24.1. When modeling the cost of x movie tickets, what should x represent?

A. the total cost
B. the number of tickets
C. the ticket price only
D. the starting fee

24.2. Which equation matches 'a $12 fee plus $5 per hour'?

A. y = 12x + 5
B. y = 5x + 12
C. y = 17x
D. y = 12 + 5

24.3. A model predicts -4 tickets sold. Why is that unreasonable?

A. Models can never be wrong
B. Ticket counts cannot be negative
C. The slope must be positive
D. A line cannot cross the axis

24.4. If x = 6 solves a ticket model, what does x = 6 usually mean?

A. the cost is $6
B. 6 tickets
C. the model has slope 6
D. the y-intercept is 6

24.5. A quantity doubles every month. Which model family fits best?

A. linear
B. quadratic
C. exponential
D. constant

25. A parking garage charges $6 to enter plus $2 per hour. Which model gives total cost y after x hours?

A. y = 6x + 2
B. y = 2x + 6
C. y = 2(x + 6)
D. y = 6 - 2x

25.1. Which situation is best modeled by a linear relationship?

A. a value doubles each day
B. a cost increases by $4 each week
C. a ball rises then falls
D. a bacteria culture triples hourly

25.2. Which situation is best modeled by a quadratic relationship?

A. a ball thrown upward
B. a parking fee with a flat start
C. a bank fee per month
D. a population that doubles

25.3. Which situation suggests exponential growth?

A. gains 3 inches each week
B. doubles every day
C. has a one-time fee
D. stays constant

25.4. Which situation suggests exponential decay?

A. loses the same percent each year
B. loses $5 each year
C. gains 2 items each hour
D. stays on a straight line

25.5. A student picks a linear model for a quantity that triples each hour. What is wrong?

A. tripling is multiplicative, not additive
B. linear models are always wrong
C. the quantity must be quadratic
D. tripling means subtract 3

26. A gym charges a $25 sign-up fee and $18 per month. Which equation gives total cost y after x months?

A. y = 25x + 18
B. y = 43x
C. y = 18x + 25
D. y = 18x - 25

26.1. A gym charges a $25 sign-up fee and $15 each month. Which equation models total cost C after m months?

A. C = 25m + 15
B. C = 15m + 25
C. C = 40m
D. C = 25 + 15

26.2. A parking garage charges $6 to enter plus $2 per hour. Which model gives total cost y after x hours?

A. y = 6x + 2
B. y = 2x + 6
C. y = 8x
D. y = 6 + 2

26.3. A candle is 18 cm tall and burns down 2 cm each hour. Which equation gives height h after t hours?

A. h = 18 + 2t
B. h = 2t - 18
C. h = 18 - 2t
D. h = 16t

26.4. In y = 12x + 3 for movie-ticket cost, the 12 means:

A. the booking fee
B. the cost per ticket
C. the number of tickets
D. the total when x = 0

26.5. In a plan-cost model y = 9 + 3x, the 9 usually means:

A. cost per movie
B. starting fee
C. number of movies
D. the slope sign

27. A bacteria culture starts at 12 and doubles each day. Which model gives y after x days?

A. y = 12(2^x)
B. y = 2x + 12
C. y = 12x^2
D. y = 24x

27.1. Which situation is best modeled by a linear relationship?

A. a value doubles each day
B. a cost increases by $4 each week
C. a ball rises then falls
D. a bacteria culture triples hourly

27.2. Which situation is best modeled by a quadratic relationship?

A. a ball thrown upward
B. a parking fee with a flat start
C. a bank fee per month
D. a population that doubles

27.3. Which situation suggests exponential growth?

A. gains 3 inches each week
B. doubles every day
C. has a one-time fee
D. stays constant

27.4. Which situation suggests exponential decay?

A. loses the same percent each year
B. loses $5 each year
C. gains 2 items each hour
D. stays on a straight line

27.5. A student picks a linear model for a quantity that triples each hour. What is wrong?

A. tripling is multiplicative, not additive
B. linear models are always wrong
C. the quantity must be quadratic
D. tripling means subtract 3

28. A candle is 18 centimeters tall and burns down 2 centimeters each hour. Which equation gives height h after t hours?

A. h = 2t + 18
B. h = 18(0.8^t)
C. h = t^2 + 18
D. h = 18 - 2t

28.1. A gym charges a $25 sign-up fee and $15 each month. Which equation models total cost C after m months?

A. C = 25m + 15
B. C = 15m + 25
C. C = 40m
D. C = 25 + 15

28.2. A parking garage charges $6 to enter plus $2 per hour. Which model gives total cost y after x hours?

A. y = 6x + 2
B. y = 2x + 6
C. y = 8x
D. y = 6 + 2

28.3. A candle is 18 cm tall and burns down 2 cm each hour. Which equation gives height h after t hours?

A. h = 18 + 2t
B. h = 2t - 18
C. h = 18 - 2t
D. h = 16t

28.4. In y = 12x + 3 for movie-ticket cost, the 12 means:

A. the booking fee
B. the cost per ticket
C. the number of tickets
D. the total when x = 0

28.5. In a plan-cost model y = 9 + 3x, the 9 usually means:

A. cost per movie
B. starting fee
C. number of movies
D. the slope sign

29. Movie tickets cost $12 each plus a one-time booking fee of $3. Write an equation for total cost y in terms of number of tickets x. Answer in the form y = ...

29.1. Which situation is best modeled by a linear relationship?

A. a value doubles each day
B. a cost increases by $4 each week
C. a ball rises then falls
D. a bacteria culture triples hourly

29.2. Which situation is best modeled by a quadratic relationship?

A. a ball thrown upward
B. a parking fee with a flat start
C. a bank fee per month
D. a population that doubles

29.3. Which situation suggests exponential growth?

A. gains 3 inches each week
B. doubles every day
C. has a one-time fee
D. stays constant

29.4. Which situation suggests exponential decay?

A. loses the same percent each year
B. loses $5 each year
C. gains 2 items each hour
D. stays on a straight line

29.5. A student picks a linear model for a quantity that triples each hour. What is wrong?

A. tripling is multiplicative, not additive
B. linear models are always wrong
C. the quantity must be quadratic
D. tripling means subtract 3

30. A rumor triples its reach each hour. Which family best models the situation?

A. Linear
B. Exponential
C. Quadratic
D. Constant

30.1. Which situation is best modeled by a linear relationship?

A. a value doubles each day
B. a cost increases by $4 each week
C. a ball rises then falls
D. a bacteria culture triples hourly

30.2. Which situation is best modeled by a quadratic relationship?

A. a ball thrown upward
B. a parking fee with a flat start
C. a bank fee per month
D. a population that doubles

30.3. Which situation suggests exponential growth?

A. gains 3 inches each week
B. doubles every day
C. has a one-time fee
D. stays constant

30.4. Which situation suggests exponential decay?

A. loses the same percent each year
B. loses $5 each year
C. gains 2 items each hour
D. stays on a straight line

30.5. A student picks a linear model for a quantity that triples each hour. What is wrong?

A. tripling is multiplicative, not additive
B. linear models are always wrong
C. the quantity must be quadratic
D. tripling means subtract 3

31. A ball is thrown upward and then falls back down. Which family best models height versus time?

A. Linear
B. Exponential
C. Quadratic
D. Constant

31.1. Which situation is best modeled by a linear relationship?

A. a value doubles each day
B. a cost increases by $4 each week
C. a ball rises then falls
D. a bacteria culture triples hourly

31.2. Which situation is best modeled by a quadratic relationship?

A. a ball thrown upward
B. a parking fee with a flat start
C. a bank fee per month
D. a population that doubles

31.3. Which situation suggests exponential growth?

A. gains 3 inches each week
B. doubles every day
C. has a one-time fee
D. stays constant

31.4. Which situation suggests exponential decay?

A. loses the same percent each year
B. loses $5 each year
C. gains 2 items each hour
D. stays on a straight line

31.5. A student picks a linear model for a quantity that triples each hour. What is wrong?

A. tripling is multiplicative, not additive
B. linear models are always wrong
C. the quantity must be quadratic
D. tripling means subtract 3

32. Adult tickets cost $10 and student tickets cost $6. A group buys 12 tickets for $96. Let a be adult tickets and s be student tickets. Write the system as two equations.

32.1. A ticket problem asks for the number of adult tickets. Which variable definition is best?

A. x = total cost
B. a = number of adult tickets
C. t = ticket price
D. y = student age

32.2. If x stands for number of boxes, then x = 6 means:

A. $6 total
B. 6 boxes
C. 6 dollars per box
D. the box size is 6

32.3. A notebook problem is about buying packs. Which variable is most useful?

A. c = total cost
B. p = number of packs
C. d = discount
D. n = notebook color

32.4. A student lets x be the number of boxes but later says x = 12 means $12. What went wrong?

A. they changed the variable meaning
B. they solved incorrectly
C. they used the wrong operation
D. nothing

32.5. In a cost model, the independent variable is often:

A. the final total
B. the quantity being chosen or counted
C. the y-intercept only
D. the graph scale