



THIRD SPACE
LEARNING

7th Grade Pennsylvania State Test

State Test Grade 7

Grade 7

Questions

Name:

Class:

Date:

Score:

No Calculator For Questions 1 - 6



1 Which expression has the greatest value when $y = 60$?

A. $y - (-15)$

B. $-15 - y$

C. $y - 15$

D. $15 - y$

2 What is the value of the expression? Round to the nearest thousandth.

$$\frac{2 - \frac{1}{5} \div 3 + 1.1^2}{-6 \times 2}$$

A. -0.436

B. -0.262

C. -0.050

D. 0.972

- 3 Which expressions are equivalent to $5(x + 0.5) - 1.6x - 9$? Select all the correct answers.

A. $-6.6x - 11.5$
B. $-5.1x$
C. $3.4x - 6.5$
D. $-3.1x$

- 4 Julie runs $11\frac{1}{2}$ miles in $2\frac{1}{4}$ hours. What is her average speed in miles per hour?

A. $5\frac{1}{9}$ mph
B. 6 mph
C. $9\frac{1}{4}$ mph
D. $6\frac{1}{4}$ mph

- 5 Solve $6\frac{5}{9} - 5\frac{1}{6} + 1\frac{2}{3}$.

A. $-\frac{5}{18}$
B. $6\frac{8}{18}$
C. 4
D. $3\frac{1}{18}$

6 Evaluate the following expression: $(-9)(0.3)(\frac{4}{5})$

- A. -21.6
- B. 21.6
- C. -2.16
- D. 2.16

Calculator Can Be Used For Questions 7 - 45



7 A pair of shoes that were originally \$45.00 are on sale for 40% off. After the discount and the addition of a 7% sales tax. How much will the jeans cost, including tax?

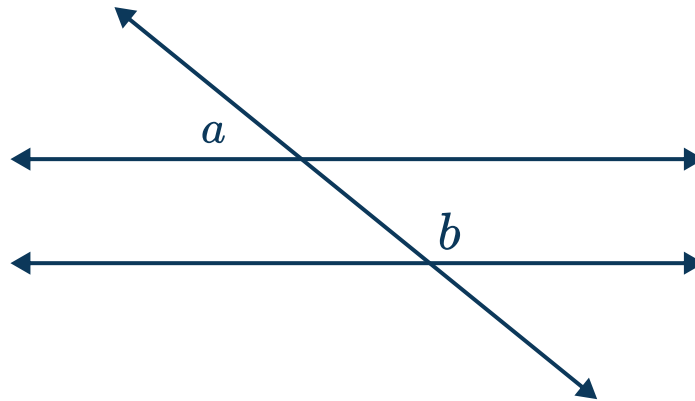
- A. \$28.89
- B. \$19.26
- C. \$27.00
- D. \$18.90

8 A tree grows at a constant rate of 5.77 centimeters per year. If the tree is already 67.1 centimeters tall, how many centimeters tall will it be in 19 years?

Which equation correctly estimates the solution?

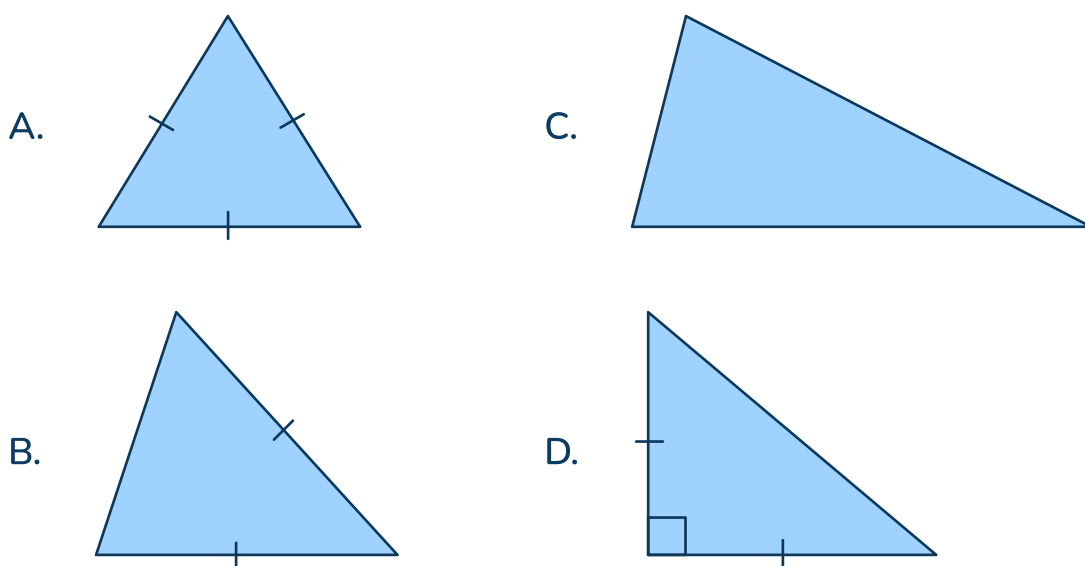
- A. $65 - 6(20)$
- B. $6 \times 20 + 70$
- C. $(67 + 19) \times 6$
- D. $70 \times 20 + 6$

- 9 Angle a is 35° . What is the measure of angle b ?



- A. 35°
 - B. 65°
 - C. 105°
 - D. 145°
-

- 10 Which triangle is an acute isosceles?

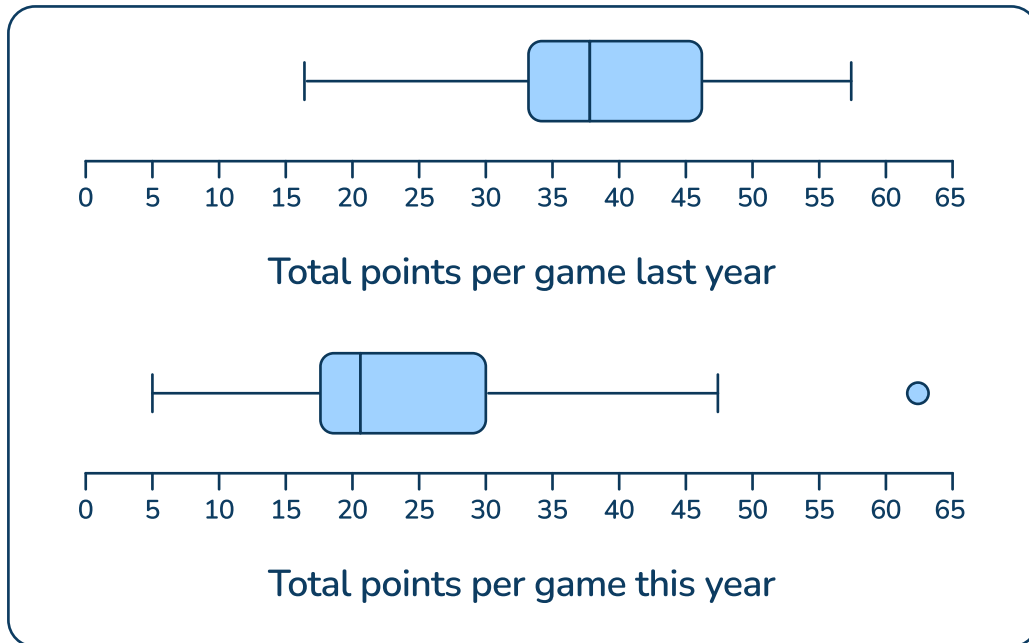


- 11** The table below shows the proportional relationship between x and y . What is the constant of proportionality?

x	y
3	16.5
5	27.5
6	33
12	66

- A. 16.5
- B. 14.5
- C. 11
- D. 5.5

- 12 The two box plots show the total points per game for the school's football team last year and this year.



Chen says that on average, the team was better last year. Which statement about the box plot supports this conclusion?

- A. There is an outlier of 10 from the games this year, but no outlier for last year.
- B. All the games from last year scored more points than the games for this year.
- C. More than 75% of this year's games had less points than the top 75% of last year's.
- D. The minimum for this year is less than the minimum for last year.

- 13 A circle's area is 25π . What is the circle's circumference? Round to the nearest whole number.

A. 16
B. 79
C. 157
D. 31

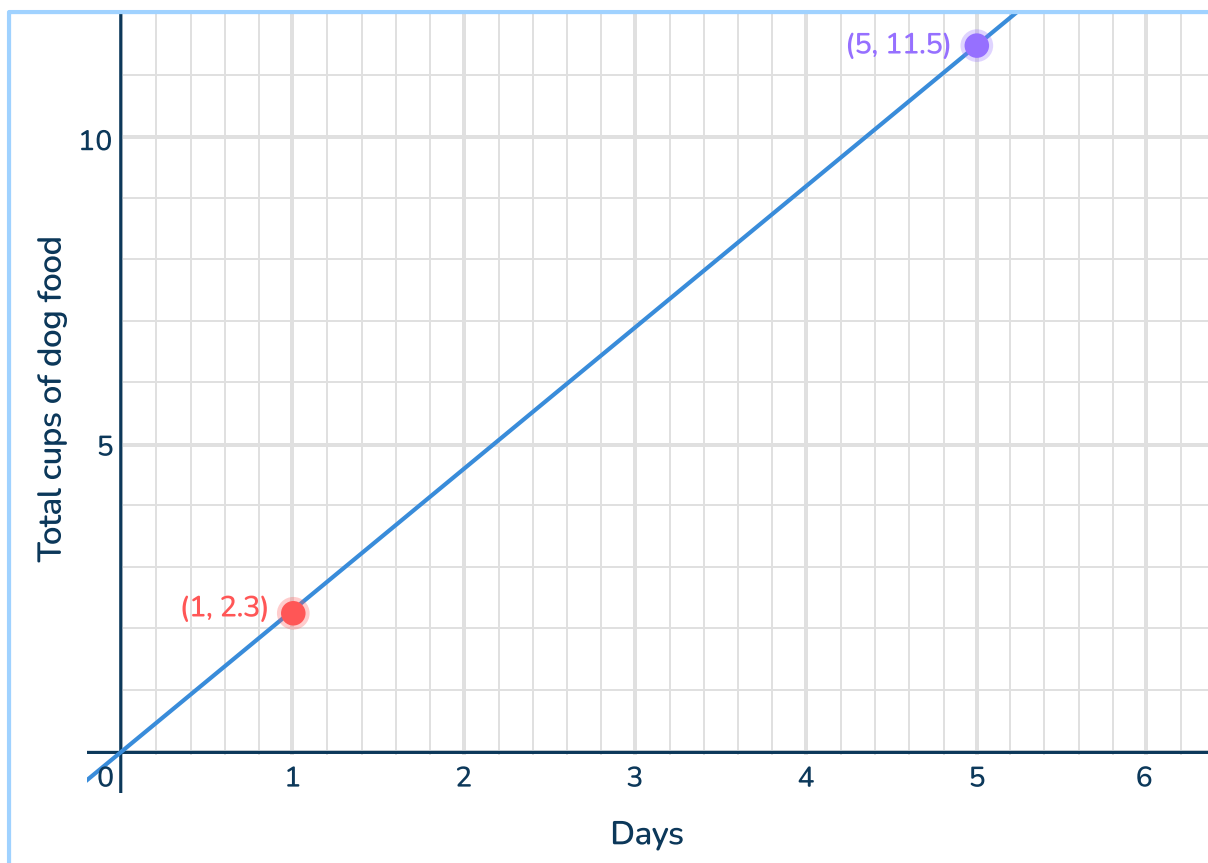
- 14 The weather app indicates that the probability of rain tomorrow is 0.8. Which word is the best description of the likelihood of rain tomorrow?

A. likely
B. unlikely
C. certain
D. impossible

- 15 The 7th graders at Moore Middle need at least \$750 for their field trip. They will raise money by having a school dance. Each student pays \$4 to attend and guests pay \$7.
Choose the inequality and solution that represents how many guests, g , need to attend to reach the fundraising goal if 95 students attend.

A. $4g + 7g \geq 750$
B. $750 \leq 380 + 7g$
C. $95 < 4g$
D. $750 - 95 \geq 7g$

16



Which statement about the graph is NOT true?

- A. The point (1, 2.3) is the unit rate of cups per day.
- B. The points (0,0) and (3, 6.9) are also on the line.
- C. The relationship between days and the total cups of dog food is proportional.
- D. The point (5, 11.5) shows that the total cups of dog food is 5 after 11.5 days.

17

Vicky has two water containers. One is a rectangular prism that measures 3 ft by 2.5 ft by 4 ft. The other is a cylinder that has a diameter of 5 ft and a height of 4 ft. How much water do the two containers hold together?

- A. 109 ft^3
- B. 130 ft^3
- C. 93 ft^3
- D. 50 ft^3

18 Which table shows a proportional relationship between x and y ?

A.

x	0	4	6	7
y	1	8	12	14

B.

x	0	2	4	6
y	0	3	5	7

C.

x	2	6	4	10
y	1	3	2	5

D.

x	1	1.5	3	11
y	2	3	6	22

19 $\frac{2}{3}$ of a serving has $\frac{1}{4}$ of a cup of fruit. How many cups of fruit are in 1 serving?

A. $\frac{1}{6}$

B. $2\frac{2}{3}$

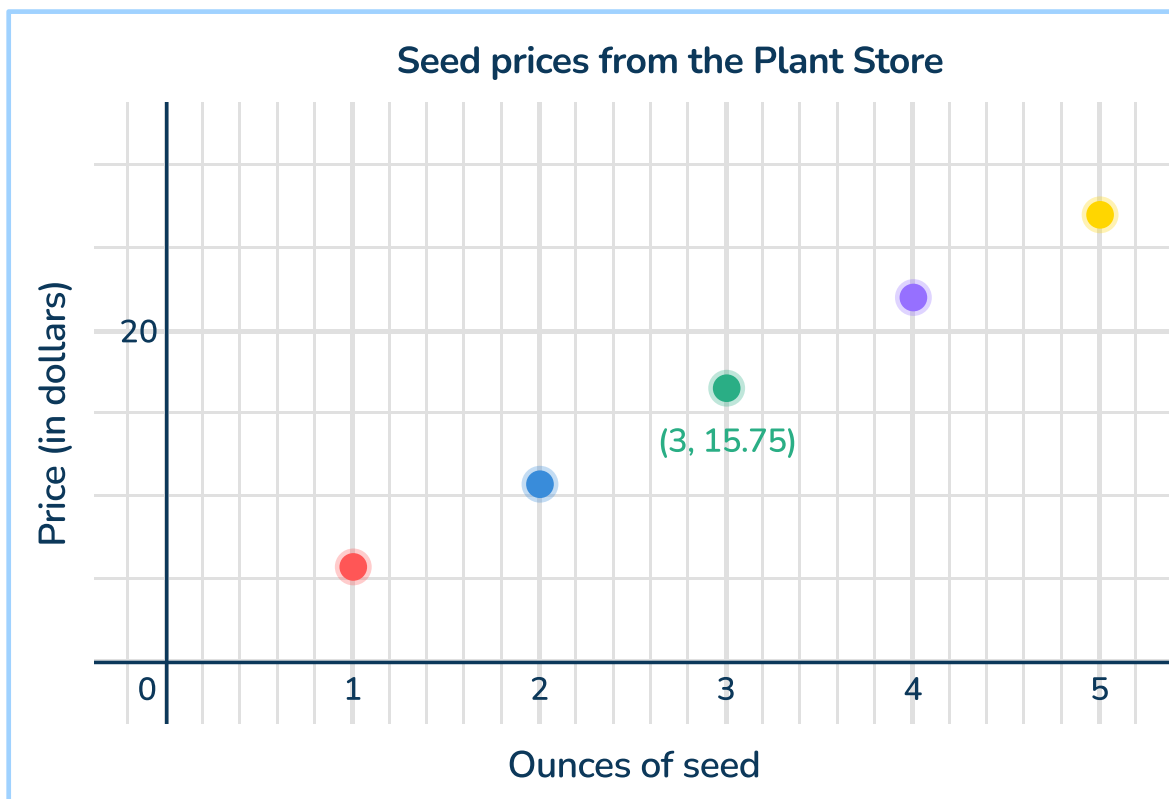
C. $\frac{3}{8}$

D. $\frac{11}{12}$

- 20 Tom bought 4 books at the same price. Tom went to the store with \$73 and left with \$13.04. Choose the equation and solution that represents the cost of each game, b .

A. $73 - 4b = 13.04$, $b = 14.99$
 B. $13.04 = 4b - 73$, $b = 21.51$
 C. $73 - 13.04b = 4$, $b = 14.99$
 D. $4b = 73 + 13.04$, $b = 21.51$

- 21 What does point (3, 15.75) mean in the context of the graph below?

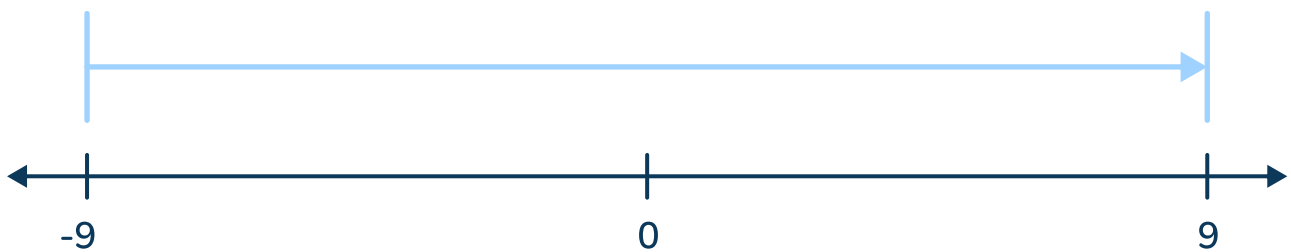


A. 15.75 ounces of seeds cost \$3
 B. 3 ounces of seeds cost \$15.75
 C. 15.75 seeds cost \$3
 D. 3 seeds cost \$15.75

22 Which expression is equivalent to $-135x + 9$?

- A. $3(-45x + 3)$
- B. $9(-15x - 1)$
- C. $45(-3x - 36)$
- D. $-9(15x + 1)$

23 Which equation is shown by the number line?



- A. $-9 + -9 = 18$
- B. $9 + 0 = -9$
- C. $-9 + 18 = 9$
- D. $-9 - (-18) = 9$

24 Manuel is three years younger than his brother Victor. Victor is twice the age of their sister Sara. Which equation(s) show the relationship between Manuel's age, m , and Sara's age, s . Select all the correct answers.

- A. $2m - 3 = s$
- B. $2s - 3 = m$
- C. $2(m - 3) = s$
- D. $2(s - 3) = m$

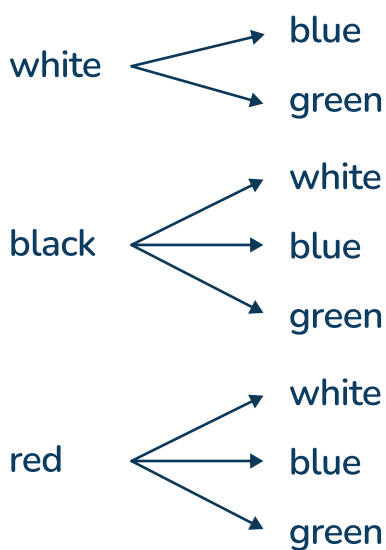
25 There are 3 colors of socks and 3 colors of shoes.

Socks: white, black, red

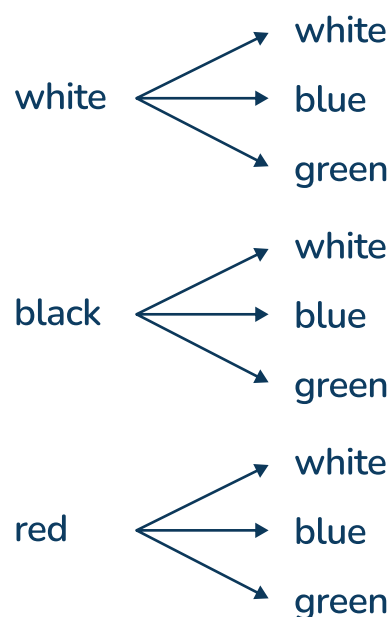
Shoes: white, blue, green

Which is the correct sample space for all possible combinations of socks and shoes?

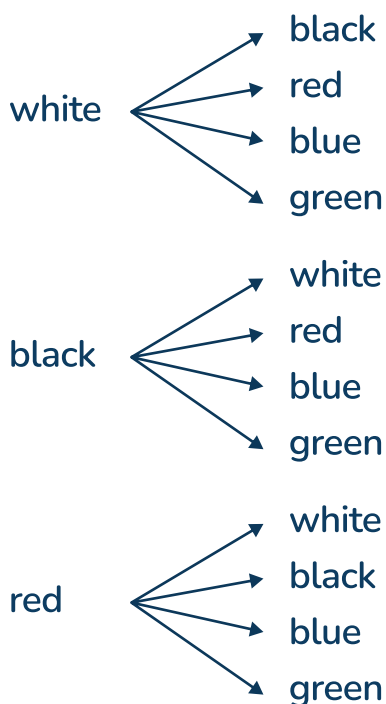
A. Socks Shoes



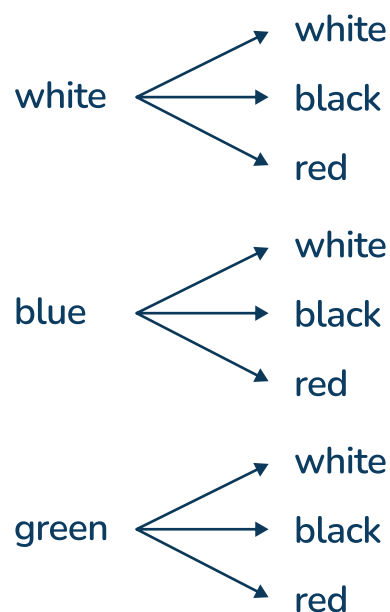
C. Socks Shoes



B. Socks Shoes



D. Socks Shoes



26 Dhruv is planning an event at his middle school. He wants to know what movie students would like to watch. He plans on asking a sample of students. Which process is an example of random sampling?

- A. Dhruv can choose the 30 students in his social studies class.
- B. Dhruv can randomly choose 15 of his friends and 15 of his teachers.
- C. Dhruv can choose the first 30 students who buy lunch.
- D. Dhruv can randomly choose 30 students from a list of all students.

27 Anita is solving the two equations below. She says, "I can just solve expression a because expression b will have the same answer." Do you agree? Why or why not?

- Expression a: $4 - 5\frac{2}{3}$
- Expression b: $5\frac{2}{3} + (-4)$

- A. Yes, because the expressions have the same numbers.
- B. No, because the terms in each expression are opposites.
- C. Yes, because subtracting is the same as adding the opposite.
- D. No, because you cannot subtract a larger number from a smaller one.

- 28 Joanna randomly chose 50 people leaving a store and asked how much time they had spent there. The mean response was 25 minutes. Then she randomly chose 300 people leaving the store the next day and asked the same question. The mean response was 10 minutes.

Which choice *incorrectly* completes the sentence below?

The samples each day were different because...

- A. ...the people Joanna asked on each day were not the same.
- B. ...the sample on the second day was much larger, leading to less variation.
- C. ...random sampling always leads to different results in every sample.
- D. ...some people weren't sure and estimated the time they had been in the store.

-
- 29 The equation $5.75x = y$ models the cost, in dollars, for a child's movie tickets. The table models the cost, y , for an adult's ticket.

x	3	5	6
y	\$36.75	\$61.25	\$73.50

Which comparison statement is true?

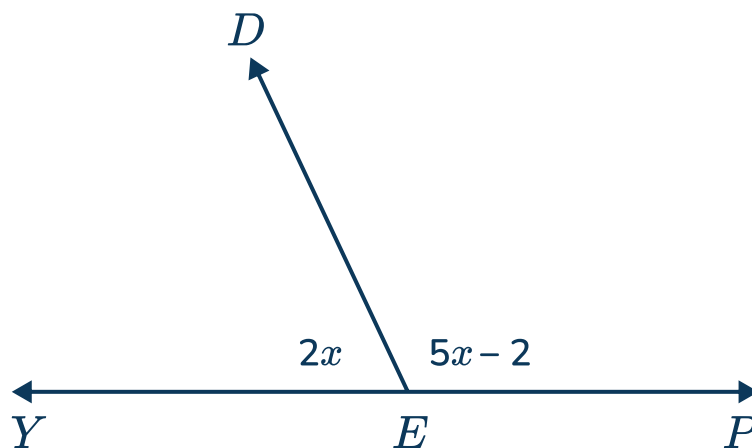
- A. 1 adult ticket costs \$19.50 more than 1 child ticket
- B. 1 child ticket costs \$6.50 more than 1 adult ticket
- C. 1 child ticket and 1 adult ticket cost \$19.50
- D. 1 adult ticket costs \$6.50 more than 1 child ticket

- 30 The ordered pairs show the relationship between the pounds of tea, x , and their cost, y : $(3.2, 80.896)$; $(5.6, 141.568)$; $(11.1, 280.608)$

Based on the relationship shown by the ordered pairs, how much will 7.8 pounds of tea cost?

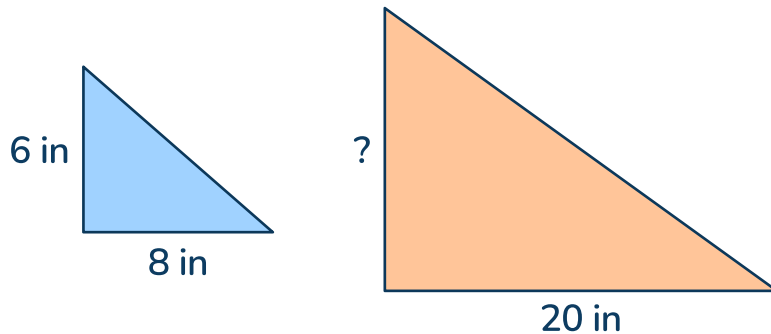
- A. \$25.28
- B. \$197.18
- C. \$143.77
- D. \$222.46

- 31 The figure shows line YP and two angles formed by ray ED . Solve for angle DEP .



- A. 26°
- B. 52°
- C. 128°
- D. 115°

- 32 The orange triangle is a scaled version of the blue triangle. What is the area of the orange triangle, in square inches?



- A. 15
B. 18
C. 300
D. 150
-
- 33 An animal shelter adopted 15 pets this week, leaving 42 pets at the shelter. What was the percent change in pets at the shelter this week? Round to the nearest whole percent.

- A. 26%
B. 36%
C. 25%
D. 136%

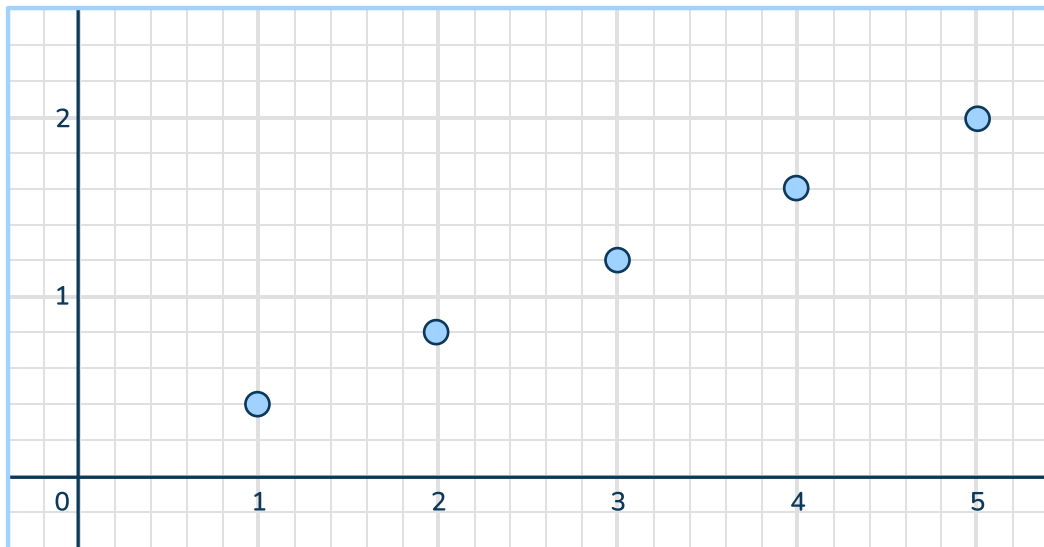
34 Convert $\frac{5}{9}$ to a decimal.

- A. 0.59
- B. $0.\overline{5}$
- C. 0.9
- D. 5.9

35 There are three different colors of marbles in a bag. If the probability of getting blue is $\frac{2}{5}$ and the probability of getting yellow is $\frac{1}{7}$, what is the probability of getting red?

- A. $\frac{9}{35}$
- B. $\frac{19}{35}$
- C. $\frac{16}{35}$
- D. $\frac{3}{35}$

36



What is the constant of proportionality for the relationship shown in the graph?

- A. $\frac{1}{2}$
- B. 5
- C. $\frac{2}{5}$
- D. 2

37 Which value is closest to the difference of $\frac{33}{31} - \frac{14}{5}$?

- A. $\frac{1}{2}$
- B. $-\frac{1}{2}$
- C. 1
- D. -1

- 38 Ross makes and sells bracelets. Ross has already earned \$42.50 by selling 5 bracelets, b . Ross wants to earn at least \$100. Write an inequality to represent how many more bracelets Ross needs to sell.

- A. $5b + 8.5 \geq 100$
- B. $5b + 8.5 \leq 100$
- C. $8.5b + 42.5 \leq 100$
- D. $8.5b + 42.5 \geq 100$

- 39 The table below shows the number of words typed in a certain amount of minutes.

Minutes	Words Typed
40	1,680
50	2,100
90	3,780

Which equation shows the relationship between the number of words typed, w , and the number of minutes, m ?

- A. $42m = w$
- B. $w = 168m$
- C. $21m = w$
- D. $w = 420m$

- 40 Jackie earns \$21.70 per hour and works 40 hours per week. Jackie is paid every 2 weeks, and she puts 20% of her check into savings. How much money does Mae save after 6 weeks?

A. \$520.80
B. \$1,041.60
C. \$2,083.20
D. \$4,166.40

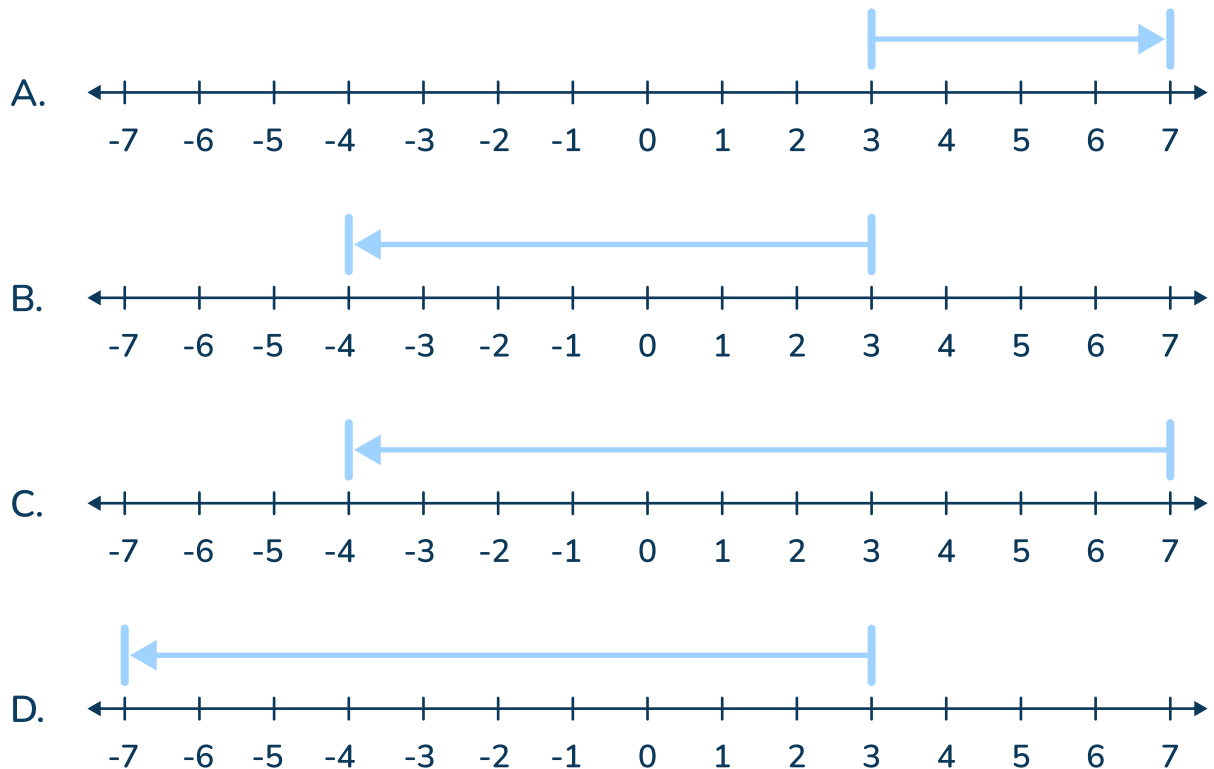
-
- 41 A bag contains red marbles, blue marbles and green marbles. The number of each of the marbles in the bag is as follows:

- 7 red marbles
- 6 blue marbles
- 12 green marbles

What is the probability that the marble selected is NOT blue?

A. 24%
B. 76%
C. 32%
D. 58%

42 Which number line shows $3 - 7$?

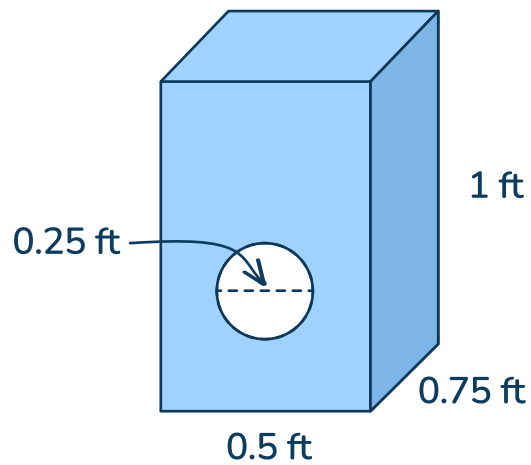


43 The number of people who came to a football game this year is represented by $1.08n$, where n is the number of people who came to the same game last year.

Which sentence describes the change from this year to last year?

- A. There were 1.08% more people this year.
- B. There were 108% more people last year.
- C. There were 8% more people this year
- D. There were 0.08% more people last year.

- 44 Marshall paints and sells birdhouses.



How many square feet of paint does Marshall use to paint 1 birdhouse?
Round to the nearest thousandth.

- A. 1.228 ft²
- B. 0.375 ft²
- C. 2.858 ft²
- D. 3.201 ft²

Open Ended Question

- 45 A bank plans appointments from 9:00 am – 3:00 pm every 15 minutes per banker. There are 5 bankers who are available for appointments.

Part A: Write an equation showing the total appointments left, a , given the hours passed in a day, h . Explain each part of the equation in context.

Equation 1: _____

Part B: Write an equivalent equation that represents Part A in a different way. Explain each part of the equivalent equation in context. Then compare it to the first equation.

Equation 2: _____

Answer Key - Multiple Choice

Item number	Correct answer	Standard(s)	DOK
1	A	M07.A-N.1.1.1	DOK 1
2	B	M07.A-N.1.1.1, M07.A-N.1.1.3	DOK 1
3	C	M07.B-E.1.1	DOK 1
4	A	M07.A-R.1.1.1	DOK 2
5	D	M07.A-N.1.1.1	DOK 1
6	C	M07.A-N.1.1.3	DOK 1
7	A	M07.A-R.1.1.6	DOK 2
8	B	A1.1.1.4.1	DOK 2
9	D	M07.C-G.2.1.2	DOK 1
10	B	M07.C-G.1.1.2	DOK 1
11	D	M07.A-R.1.1.3	DOK 1
12	C	M07.D-S.2.1.1	DOK 2
13	D	M07.C-G.2.2.1	DOK 2
14	A	M07.D-S.3.1.1	DOK 1
15	B	M07.B-E.2.2.2	DOK 2
16	D	M07.A-R.1.1.5	DOK 2
17	A	M07.C-G.2.2.2	DOK 2

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Item number	Correct answer	Standard(s)	DOK
18	D	M07.A-R.1.1.2	DOK 1
19	C	M07.A-R.1.1.1	DOK 2
20	A	M07.B-E.2.2.1	DOK 2
21	B	M07.A-R.1.1.5	DOK 1
22	A	M07.B-E.1.1	DOK 1
23	C	M07.A-N.1.1.2	DOK 2
24	B	M07.B-E.2.2.1	DOK 2
25	C	M07.D-S.3.2.3	DOK 1
26	D	M07.D-S.1.1.1	DOK 2
27	B	M07.A-N.1.1.1	DOK 3
28	C	M07.D-S.2.1.1	DOK 2
29	D	M07.A-R.1.1.3	DOK 2
30	B	M07.A-R.1.1.6	DOK 2
31	C	M07.C-G.2.1.1	DOK 2
32	D	M07.C-G.1.1.1	DOK 2
33	A	M07.A-R.1.1.6	DOK 2
34	B	M07.A-N.1.1.3	DOK 1
35	C	M07.D-S.3.2.	DOK 1
36	C	M07.A-R.1.1.3	DOK 1

Pennsylvania State Test | Grade 7 | Answers

Item number	Correct answer	Standard(s)	DOK
37	D	M07.A-N.1.1.1	DOK 2
38	D	M07.B-E.2.2.2	DOK 2
39	A	M07.A-R.1.1.4	DOK 2
40	B	M07.A-R.1.1.6	DOK 2
41	B	M07.D-S.3.2.2	DOK 2
42	B	M07.A-N.1.1.2	DOK 2
43	C	M07.B-E.2.1.1	DOK 2
44	D	M07.C-G.2.2.2	DOK 2

Item	KEY	Rationale
45	6 points	<p>Student correctly creates two equations that model the situation and correctly explains and compares each part of the equation in context.</p> <ul style="list-style-type: none"> • $120 - 20h = a$ <ul style="list-style-type: none"> • 120 is the total appointments in 1 day and $20h$ is the number of appointments completed for each hour, h, that has passed • $5(24 - 4h) = a$ <ul style="list-style-type: none"> • 24 is the total appointments for each banker and $4h$ is the number of appointments completed for each hour, h, per banker. Multiplying by 5 shows that there are 5 bankers. • $20(6 - h) = a$ <ul style="list-style-type: none"> • 20 is the total number of appointments for each hour. 6 is the total hours of appointments in 1 day, therefore $6 - h$ is the hours passed. • $24 \times 5 - 4 \times 5h = a$ <ul style="list-style-type: none"> • 18 is the total appointments for each banker and multiplying by 5 shows that there are 5 bankers. 4 is the number of appointments completed for each hour per banker and multiplying by $5h$ shows that there are 5 bankers and h hours passed. • $4 \times 6 \times 5 - 4 \times 45 = a$ <ul style="list-style-type: none"> • 4 represents the appointments each hour per banker. Multiplying by 6 shows that there are 6 hours of appointments each day and multiplying by 5 shows that there are 5 bankers. 4 is the number of appointments completed for each hour per banker and multiplying by $5h$ shows that there are 5 bankers and h hours passed. • $\frac{60}{15} \times 6 \times 5 - \frac{60}{20} \times 5h = a$ <ul style="list-style-type: none"> • $\frac{60}{15}$ represents 60 minutes in 1 hour divided by 15-minute appointments. Multiplying by 6 shows that there are 6 hours of appointments each day and multiplying by 5 shows that there are 5 bankers. $\frac{60}{20} \times 5h$ shows the number of appointments per hour times 5 bankers and the hours passed, h.
	5 points	<p>Student correctly creates two equations that model the situation and explains and compares each part of the equation in context, but some parts may be incomplete or unclear.</p>

Item	KEY	Rationale
	4 points	Student creates two equations that model the situation with 1 error and explains and compares each part of the equation in context, but some parts may be incomplete or unclear.
	3 points	Student creates two equations that model the situation with 2 errors and attempts to explain and compare each part of the equation in context, but the explanation is incomplete or unclear.
	2 points	Student creates two equations with 2 errors OR only creates one equation. Student attempts to explain and compare each part of the equation in context, but the explanation is incomplete, unclear or incorrect.
	1 point	Student creates two equations with more than 2 errors OR only creates one equation. The student attempts to explain and compare each part of the equation in context, but the explanation is incomplete, unclear or incorrect.
	0 points	Response is blank or does not include any correct calculations or explanations.

ANSWERS SORTED BY STANDARD

CC.2.1.7.D.1			
Item number	Correct answer	Standard(s)	DOK
4	A	M07.A-R.1.1.1	DOK 2
7	A	M07.A-R.1.1.6	DOK 2
11	D	M07.A-R.1.1.3	DOK 1
16	D	M07.A-R.1.1.5	DOK 2
18	D	M07.A-R.1.1.2	DOK 1
19	C	M07.A-R.1.1.1	DOK 2
21	B	M07.A-R.1.1.5	DOK 1
29	D	M07.A-R.1.1.3	DOK 2
30	B	M07.A-R.1.1.6	DOK 2
33	A	M07.A-R.1.1.6	DOK 2
36	C	M07.A-R.1.1.3	DOK 1
39	A	M07.A-R.1.1.4	DOK 2
40	B	M07.A-R.1.1.6	DOK 2

CC.2.1.7.E.1			
Item number	Correct answer	Standard(s)	DOK
1	A	M07.A-N.1.1.1	DOK 1
2	B	M07.A-N.1.1.1, M07.A-N.1.1.3	DOK 1
5	D	M07.A-N.1.1.1	DOK 1
6	C	M07.A-N.1.1.3	DOK 1
23	C	M07.A-N.1.1.2	DOK 2
27	B	M07.A-N.1.1.1	DOK 3
34	B	M07.A-N.1.1.3	DOK 1
37	D	M07.A-N.1.1.1	DOK 2
42	B	M07.A-N.1.1.2	DOK 2

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CC.2.2.7.B.1, CC.2.2.7.B.3			
Item number	Correct answer	Standard(s)	DOK
3	C	M07.B-E.1.1	DOK 1
8	B	A1.1.1.4.1	DOK 2
15	B	M07.B-E.2.2.2	DOK 2
20	A	M07.B-E.2.2.1	DOK 2
22	A	M07.B-E.1.1	DOK 1
24	B	M07.B-E.2.2.1	DOK 2
38	D	M07.B-E.2.2.2	DOK 2
43	C	M07.B-E.2.1.1	DOK 2
45	Answer shown after open-ended response question	M07.B-E.2.1.1, M07.B-E.2.2.1, M07.B-E.1.1	DOK 3

CC.2.3.7.A.1			
Item number	Correct answer	Standard(s)	DOK
9	D	M07.C-G.2.1.2	DOK 1
13	D	M07.C-G.2.2.1	DOK 2
17	A	M07.C-G.2.2.2	DOK 2
31	C	M07.C-G.2.1.1	DOK 2
44	D	M07.C-G.2.2.2	DOK 2

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CC.2.3.7.A.2			
Item number	Correct answer	Standard(s)	DOK
10	B	M07.C-G.1.1.2	DOK 1
32	D	M07.C-G.1.1.1	DOK 2

CC.2.4.7.B.1, CC.2.4.7.B.2			
Item number	Correct answer	Standard(s)	DOK
12	C	M07.D-S.2.1.1	DOK 2
26	D	M07.D-S.1.1.1	DOK 2
28	C	M07.D-S.2.1.1	DOK 2




CC.2.4.7.B.3			
Item number	Correct answer	Standard(s)	DOK
14	A	M07.D-S.3.1.1	DOK 1
25	C	M07.D-S.3.2.3	DOK 1
35	C	M07.D-S.3.2.	DOK 1
41	B	M07.D-S.3.2.2	DOK 2

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