THIRD SPACE LEARNING

7th Grade Michigan State Practice Math Test

Michigan Practice Test Grade 7

Grade 7

Questions

Name: ..... Class: .....

Date: ..... Score: .....

1 Which expression has the greatest value when $y = 45$?

A. $y - 20$
B. $y - (-20)$
C. $-20 - y$
D. $20 - y$

2 $\frac{2}{3}$ 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. $\frac{7}{12}$

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

3 Which expressions are equivalent to $5(x + 0.3) - 4.2x - 2$? Select all the correct answers.

A. $-6.2x + 1.5$
B. $5x - 4.2x - 0.5$
C. $-1.8x - 2$
D. $2.8x$
E. $0.8x - 0.5$

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4 A jar contains yellow marbles, purple marbles, and orange marbles. The number of each marble in the jar is as follows:

- 12 yellow marbles
- 8 purple marbles
- 16 orange marbles

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

A. $\frac{5}{9}$

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

C. $\frac{12}{36}$

D. $\frac{3}{4}$

5 A laptop that was originally priced at $800 is on sale for 25% off. After the discount, a 6% sales tax is added. How much will you pay for the laptop? Choose the equation representing the total cost, c.

A. $(800 \times 0.25) \times 0.06 = c$
B. $800 \times 0.25 + 1.06 = c$
C. $(800 \times 0.75) \times 1.06 = c$
D. $800 \times 0.75 + 800 \times 0.06 = c$

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6 A store sells a 12-pack of water bottles for $2.88. They also sell a 24-pack of water bottles for $4.32. What is the difference between the unit rates?

A. $0.24 per bottle
B. $0.06 per bottle
C. $1.44 per bottle
D. $0.18 per bottle

---

7 Which expressions are equal to –15? Select all the correct answers.

A. $45 \div (-3)$
B. $-5(-3)$
C. $\frac{-60}{-4}$
D. $3 \times (-5)$
E. $3 \times (-2) \times (-2)$

8 Which scenario below will result in a final value of zero?

A. Walking from the 3rd floor of a building (25 feet above ground level) to the main floor (at ground level).
B. A temperature change from 6°F to –6°F.
C. A submarine that goes from 20 meters below sea level to 30 meters below sea level.
D. The balance of an account after depositing $50, if the starting balance was -$50.

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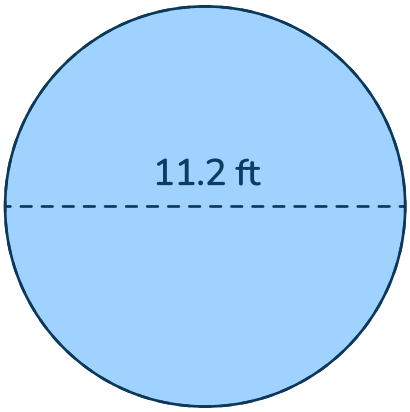
9 Which value of x makes the equation true?

$$2(x-4)-3=-\frac{1}{2}(3x-6)$$

A. $x=-3$
B. $x=4$
C. $x=-4$
D. $x=3$

10 A school is building a new fence around their circular compost bin, shown in the diagram below.



How many feet of fencing is needed to enclose the compost bin? Let π = 3.14.

A. 17.584 ft
B. 22.4 ft
C. 35.168 ft
D. 98.52 ft

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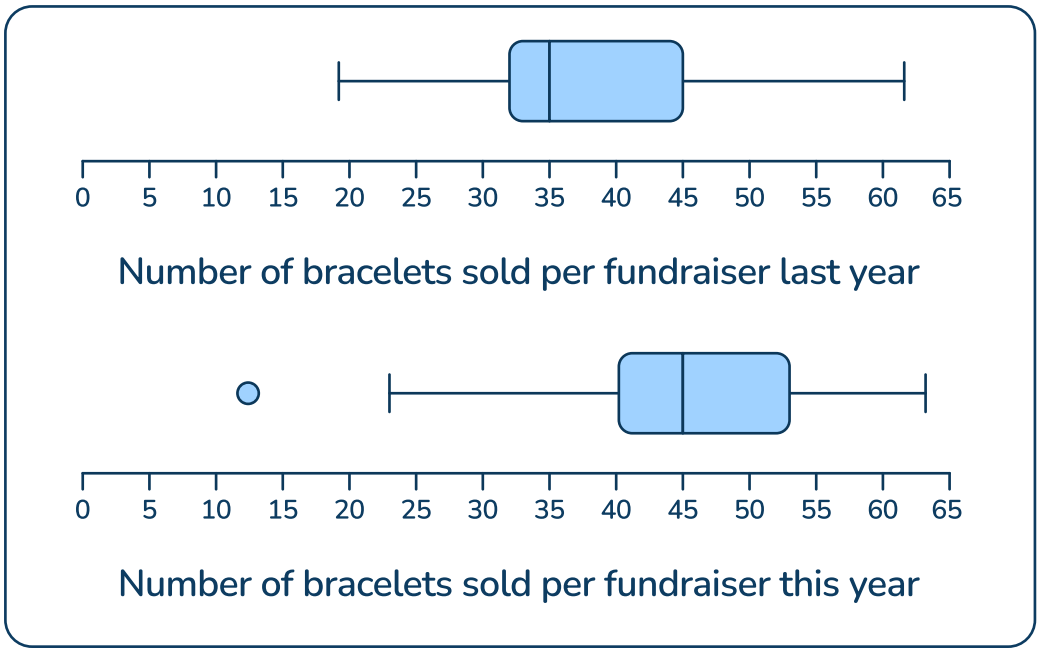
11 The table below shows the proportional relationship between x and y. What is the constant of proportionality?

x	y
4	6
6	9
7	10.5
9	13.5

A. 2
B. 2.5
C. 1.25
D. 1.5

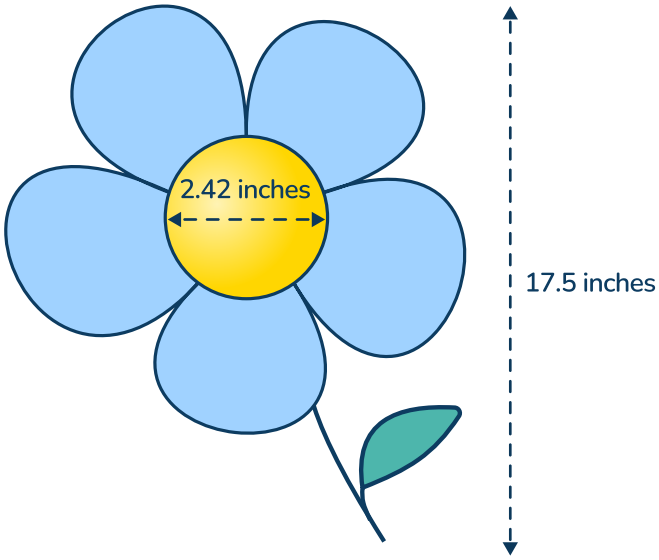
12 Fleur makes friendship bracelets and sells them at various fundraisers on the weekends. The two box plots show the total number of bracelets Fleur sold per fundraiser last year and this year.



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

A. There is an outlier of 10 in this year's fundraisers, while there were no outliers last year.
B. Fleur sold more bracelets in each fundraiser this year than last year.
C. Fleur sold more bracelets at more than half of this year's fundraisers than the top 25% of last year's.
D. The range for this year is larger than the range for last year.

13 Iris owns a flower shop. She sends the drawing below to be designed for her business cards.



She asks the designer to design a flower that is $\frac{1}{3}$ the original size.
What will the area of the center of the flower be on the business card to the nearest hundredth?
Let $\pi = 3.14$.

A. 6.13 inches^2
B. 1.53 inches^2
C. 18.40 inches^2
D. 4.60 inches^2

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14 The weather app indicates that the probability of rain tomorrow is 0.7. Which word is the best description of the likelihood of rain tomorrow?

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

15 Solve for n.

$$\frac{1}{4}n - 3 \geq -5$$

A. $n \geq -2$

B. $n \geq \frac{1}{8}$

C. $n \geq 2$

D. $n \geq -8$

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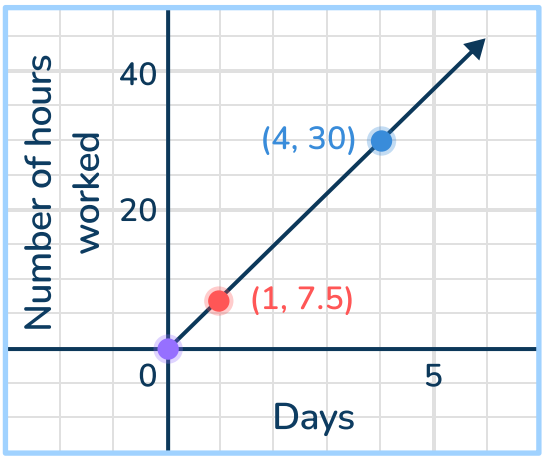
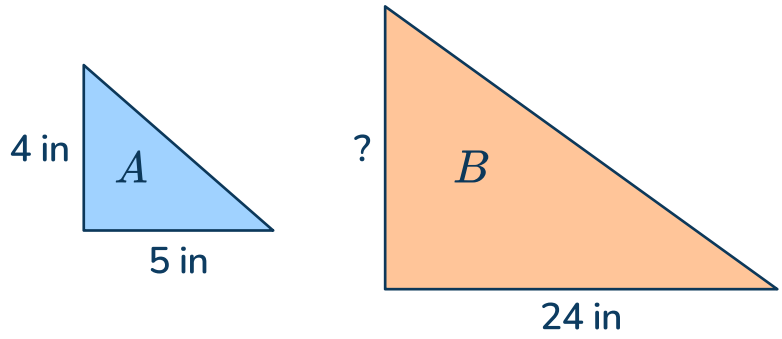
16 The graph below shows the number of hours that Hailey worked this week.



Which statements about the graph are true? Select all the correct answers.

A. The point (1, 7.5) is the unit rate per day.
B. The point (4, 30) shows that after 4 days, Hailey has worked a total of 30 hours.
C. The point (3, 23.5) is a point on the line.
D. The relationship between days and the number of hours worked is proportional.
E. As the number of hours worked increases by 1, the days increase by 7.5.

17 Triangle B is a scaled version of Triangle A. What is the missing height?



A. 4.8 in
B. 19.2 in
C. 16.8 in
D. 20 in

---

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

A.

x	0	1.5	2	2.5
y	2	3	4	5

B.

x	1	2	4	8
y	3	6	12	16

C.

x	1	2	3	4
y	1.5	3	3.5	6

D.

x	3	4.5	6	10.5
y	1	1.5	2	3.5

19 What is the value of the expression?

$$\frac{4 + \frac{1}{2} \div 2 - 4.5^2}{-6 \times 2}$$

A. –1.3
B. –1.5
C. $1.\overline{3}$
D. 1.5

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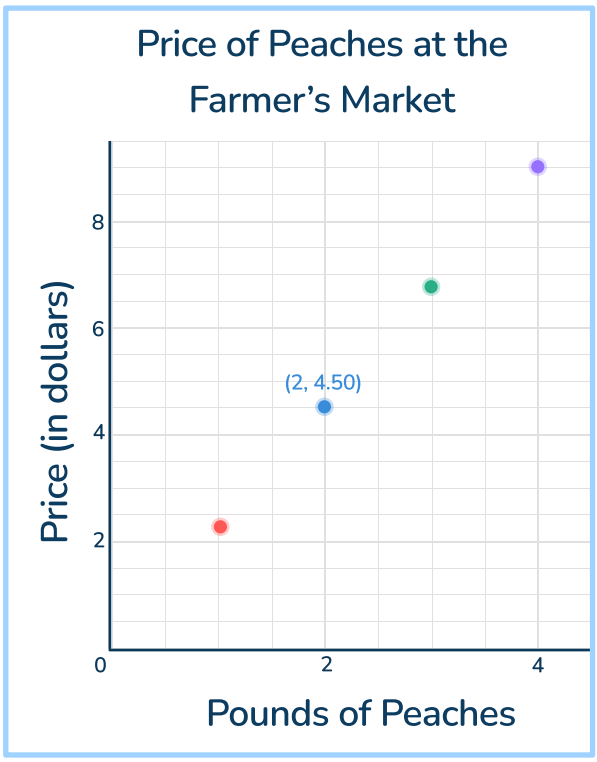
20 Miguel bought 5 games at the same price. He went to the store with $83 and left with $10.25. Choose the equation and solution that represents the cost of each game, g.

A. 83 - 5g = 10.25, g= 14.55
B. 5g - 83 = 10.25, g = 10.25
C. 5g + 10.25 = 83, g = 13.55
D. 83 - 10.25g = 5, g = 14.50

21 What does point (2, 4.50) mean in the context of the graph below?



A. 2 peaches cost $4.50
B. 4.50 peaches cost $2
C. 4.50 pounds of peaches cost $2
D. 2 pounds of peaches cost $4.50

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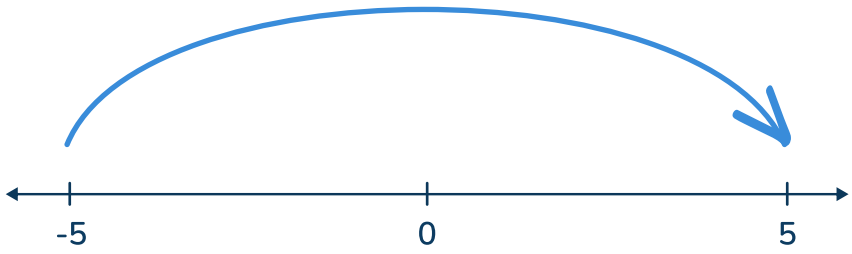
22 Which expression is equivalent to $-30y + 12$?

A. $6(5y - 2)$
B. $-2(15y - 6)$
C. $-6(-5y + 2)$
D. $2(15y - 6)$

23 Which equation is shown by the number line?



A. –5 + 10 = 5
B. 5 + (–5) = 0
C. –5 + –5 = –10
D. 5 + 10 = –5

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24 Sarah is three years older than her brother Tom. Tom is four times the age of their sister Lily. Which equation(s) show the relationship between Sarah's age, s, and Lily's age, l? Select all the correct answers.

A. $4 + 4s = l$

B. $\frac{s - 3}{4} = l$

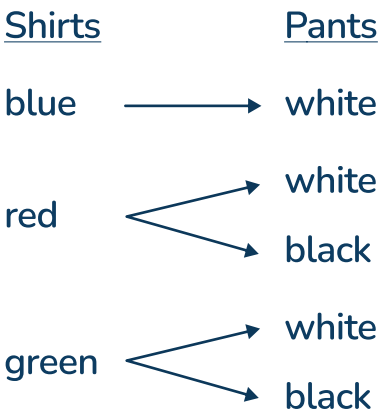
C. $4(s + 3) = l$

D. $4l + 3 = s$

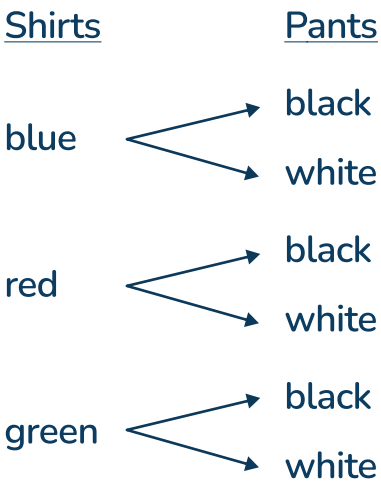
E. $4(l + 3) = s$

25 There are 3 colors of shirts and 2 colors of pants.
Shirts: blue, red, green
Pants: black, white
Which is the correct sample space for all possible combinations of shirts and pants?

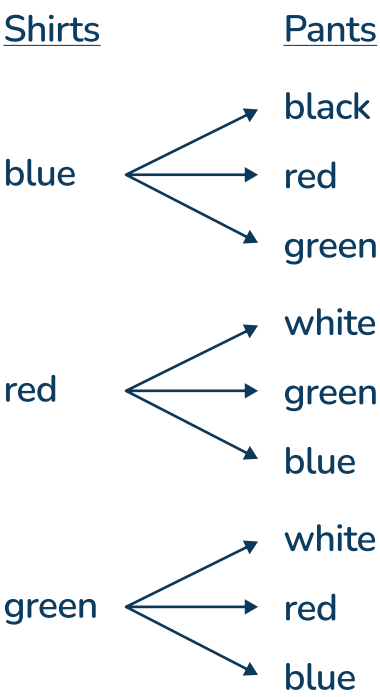
A.



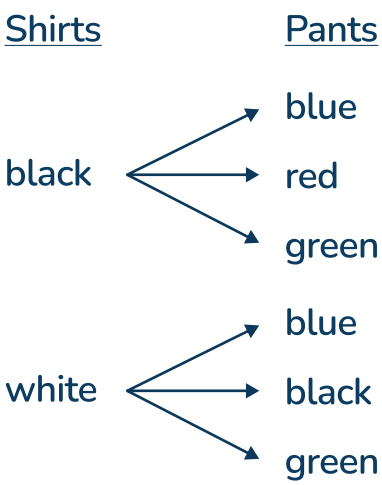
B.



C.



D.



26 Cole runs $7\frac{3}{4}$ miles in $1\frac{1}{2}$ hours. What is his average speed in miles per hour?

A. $7\frac{3}{8}$ mph

B. $6\frac{1}{4}$ mph

C. 7 mph

D. $5\frac{1}{6}$ mph

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27 Carla is working on two math expressions. She says, "I only need to solve expression X because expression Y will give the same result." Do you agree? Why or why not?
Expression X: 8 – 5.38
Expression Y: 5.3 + (–8)

A. No, because the terms in each expression have different signs.
B. Yes, because subtracting a number is the same as adding its negative.
C. No, because you can't subtract a smaller number from a larger one.
D. Yes, because both expressions involve the same numbers.

28 Lisa and Jake were comparing the price of apples, a, to oranges, o.

Lisa's equation: $a = o + 0.15o$
Jake's equation: $1.15o = a$

Which statement about the equations is correct?

A. Jake's equation shows that apples cost 115% more than oranges.
B. Lisa's equation shows apples cost 15% more than oranges.
C. Jake's equation shows that oranges cost 1.15% more than apples.
D. Lisa's equation shows that oranges cost 5% more.

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29 The equation $7.5x = y$ 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	\$30.75	\$51.25	\$61.50

Which comparison statement is true?

A. 1 adult ticket costs \$10.75 more than 1 child ticket
B. 1 child ticket costs \$2.75 more than 1 adult ticket
C. 1 adult ticket costs \$2.75 more than 1 child ticket
D. 1 child ticket and 1 adult ticket cost \$10.75

30 Evaluate the following expression: $(-8)(0.3)(\frac{3}{4})$

A. –1.2
B. 2.4
C. 1.2
D. –1.8

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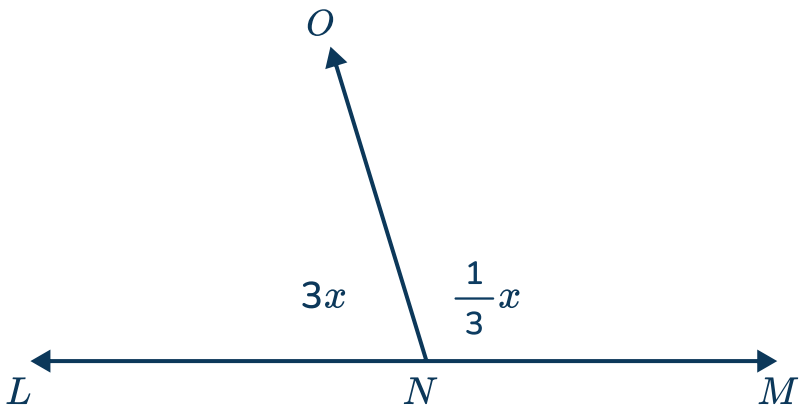
31 The figure shows line LM and two angles formed by ray NO. Solve for x.



A. 126
B. 54
C. 27
D. 180

32 Charlotte bought two pairs of shoes for $25.50 each. She also bought a pack of socks for $6. What was the total cost, including a 7% sales tax?

A. $33.71
B. $54.57
C. $60.99
D. $62.07

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33 A bakery sold 50 loaves of bread last week, and this week they sold 75 loaves. What was the percent change in the number of loaves of bread sold from last week to this week?

A. 50%
B. 25%
C. 33%
D. 125%

---

34 Convert $\frac{4}{9}$ to a decimal.

A. 0.49
B. 0.4
C. 4.9
D. $0.\overline{4}$

35 There are three different colors of marbles in a bag – blue, yellow, and red. If the probability of getting blue is $\frac{1}{4}$ and the probability of getting yellow is $\frac{2}{3}$, what is the probability of getting red?

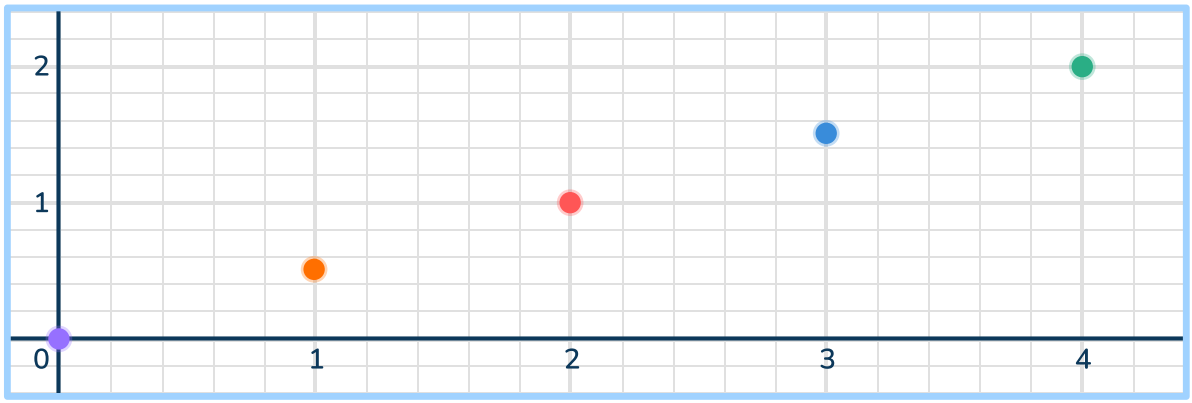
A. $\frac{11}{12}$

B. $\frac{9}{12}$

C. $\frac{1}{12}$

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

36



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

A. $\frac{1}{2}$

B. 2

C. 1.5

D. 2.5

37 Which value is closest to the difference of $\frac{25}{27} - \frac{15}{11}$?

A. $\frac{1}{2}$

B. $-\frac{1}{2}$

C. 1

D. -1

---

38 Chloe is selling homemade cookies at a farmers' market for $3 per cookie. She has already sold 12 cookies, c, and wants to make at least $60 from her sales. Which inequality represents the situation?

A. $3c + 12 \geq 60$

B. $3c + 12 \leq 60$

C. $3c + 36 \leq 60$

D. $3c + 36 \geq 60$

39 What is the equation shown by the table?

x	y
3	12.6
5	21
6	25.2

A. $4.2x = y$
B. $y = 8.4x$
C. $8.4 + x = y$
D. $y = x + 4.2$

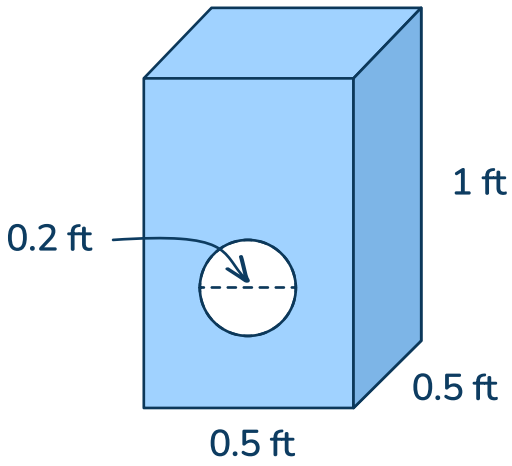
---

40 Grace earns $17.50 per hour and works 20 hours per week. Grace is paid every 2 weeks, and she puts 25% of her check into savings. How much money does Grace save after 6 weeks?

A. $1,050
B. $175
C. $525
D. $2,100

Standard: 7.NS.3 7.G.4, 7.G.6, 7.RP.3
DOK 3
Extended Answer Response - 6 points

41 Chelsie paints and sells birdhouses. The paint costs $24.59 a gallon and each gallon paints 400 square feet.



Part A: How many square feet of paint does Chelsie use to paint 1 birdhouse? Explain how you solved it.

_____
_____
_____
_____

Part B: If Chelsie has painted 20 birdhouses, what percent of the gallon of paint has she used? Round to the nearest whole percent.

_____ %

Extended response - 6 points
Standard: 7.EE.4a, 7.EE.2, 7.EE.1
DOK 3

42 A doctor's office plans appointments from 10:00 am – 3:00 pm every 20 minutes per doctor. The office has 3 doctors.

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	B	**7.NS.1c**	DOK 1
2	D	**7.RP.1**	DOK 2
3	B, E	**7.EE.1**	DOK 1
4	A	**7.SP.7**	DOK 2
5	C	**7.RP.3, 7.EE.4a**	DOK 2
6	B	**7.RP.2b**	DOK 2
7	A, D	**7.NS.2a, 7.NS.2b**	DOK 1
8	D	**7.NS.1a**	DOK 2
9	B	**7.EE.3**	DOK 1
10	C	**7.G.4**	DOK 2
11	D	**7.RP.2b**	DOK 1
12	C	**7.SP.3**	DOK 2
13	B	**7.G.1, 7.G.4**	DOK 2
14	A	**7.SP.5**	DOK 1
15	D	**7.EE.4b**	DOK 1
16	A, B, D	**7.RP.2d, 7.RP.2a, 7.RP.2b**	DOK 2
17	B	**7.G.1, 7.RP.2b**	DOK 1

Item number	Correct answer	Standard(s)	DOK
18	D	**7.RP.2a**	DOK 1
19	C	**7.NS.3**	DOK 1
20	A	**7.EE.4a**	DOK 2
21	D	**7.RP.2d**	DOK 1
22	B	**7.EE.1**	DOK 1
23	A	**7.NS.1b, 7.NS.1c**	DOK 2
24	B, D	**7.EE.1, 7.EE.3, 7.EE.4**	DOK 2
25	B	**7.SP.8b**	DOK 1
26	D	**7.RP.1**	DOK 2
27	A	**7.NS.1b, 7.NS.1c**	DOK 3
28	B	**7.EE.2, 7.RP.3**	DOK 2
29	C	**7.RP.2b**	DOK 2
30	D	**7.NS.2**	DOK 1
31	B	**7.G.5**	DOK 2
32	C	**7.EE.3, 7.RP.3**	DOK 2
33	A	**7.RP.3**	DOK 2
34	D	**7.NS.2d**	DOK 1
35	C	**7.SP.7**	DOK 1
36	A	**7.RP.2b**	DOK 1

Item number	Correct answer	Standard(s)	DOK
37	B	**7.NS.1d**	DOK 2
38	D	**7.EE.4b**	DOK 2
39	A	**7.RP.2c**	DOK 2
40	C	**7.EE.3**	DOK 2

Item	KEY	Rationale
41	6 points	Student correctly calculates the surface area (minus the hole in the front face): SA = 2 (wl + hl + hw) SA = 2 (0.5 × 0.5 + 1 × 0.5 + 1 × 0.5) = 2.5 ft² Area of the circle = πr² = 3.14 × 0.1² Area = 0.0314 ft² Total surface area of the birdhouse = 2.4686 ft² And the percent of paint left: 2.4686 ft2 × 20 = 49.372 49.372 ÷ 400 = 0.12343 = 12% Student clearly explains how they found the surface area, including subtracting the area of the circular opening from the front side.
	5 points	Student correctly calculates the surface area (minus the hole in the front face): Total surface area of the birdhouse = 2.4686 ft² And the percent of paint left = 12% Student explains how they found the surface area, but some parts of the explanation are incomplete or unclear.
	4 points	Student makes 1 calculation error for the surface area: Total surface area of the birdhouse = 2.4686 ft² And/or the percent of paint left = 12% Student explains how they found the surface area, but some parts of the explanation are incomplete or unclear.

Item	KEY	Rationale
	3 points	Student makes 2 or 3 calculation errors for the surface area: Total surface area of the birdhouse = 2.4686 ft² And/or the percent of paint left = 12% Student explains how they found the surface area, but some parts of the explanation are incomplete or unclear.
	2 points	Student makes more than 4 calculation errors for the surface area: Total surface area of the birdhouse = 2.4686 ft² And/or the percent of paint left = 12% Student attempts to explain how they found the surface area, but some parts of the explanation are incomplete or unclear.
	1 point	Student makes more than 4 calculation errors for the surface area: Total surface area of the birdhouse = 2.4686 ft² And/or the percent of paint left = 12% Student fails to explain how they found the surface area.
	0 point	Response is blank or does not include any correct calculations or explanations.

Item	KEY	Rationale

42	6 points	Student correctly creates two equations that model the situation and correctly explains and compares each part of the equation in context.
		• $45-9h=a$
		  • 45 is the total number of appointments available for all doctors in one day.
		  • $9h$ is the total number of appointments completed after h hours.
		• $3(15-3h)=a$
		  • 15 is the total appointments for each doctor and $3h$ is the number of appointments completed for each hour, h, per doctor. Multiplying by 3 shows that there are 3 doctors.
		• $9(5-h)=a$
		  • 9 is the total appointments for each hour. 5 is the total hours of appointments in 1 day, therefore $5-h$ is the hours passed.
		• $15\times3-3\times3h=a$
		  • 15 is the total appointments for each doctor and multiplying by 3 shows that there are 3 doctors. 3 is the number of appointments completed for each hour per doctor and multiplying by $3h$ shows that there are 3 doctors and h hours passed.
		• $\frac{60}{20}\times5\times3-\frac{60}{20}\times3h=a$
		  • $\frac{60}{20}$ represents 60 minutes in 1 hour divided by 20-minute appointments. Multiplying by 5 shows that there are 5 hours of appointments each day and multiplying by 3 shows that there are 3 doctors. 6020 $3h$ shows the number of appointments per hour times 3 doctors and the hours passed, h.

	5 points	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.
	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.

Item	KEY	Rationale
	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 CCSS STRAND

RP			
2	D	**7.RP.1**	DOK 2
5	C	**7.RP.3, 7.EE.4**	DOK 2
6	A	**7.RP.2b**	DOK 2
11	A	**7.RP.2b**	DOK 1
16	A, B, C	**7.RP.2d, 7.RP.2a, 7.RP.2b**	DOK 2
18	D	**7.RP.2a**	DOK 1
21	B	**7.RP.2d**	DOK 1
26	B	**7.RP.1**	DOK 2
29	D	**7.RP.2b**	DOK 2
33	D	**7.RP.3**	DOK 2
36	A	**7.RP.2b**	DOK 1
39	D	**7.RP.2c**	DOK 2

EE			
3	B, E	**7.EE.1**	DOK 1
9	B	**7.EE.3**	DOK 1
15	D	**7.EE.4b**	DOK 1
20	A	**7.EE.4a**	DOK 2
22	B	**7.EE.1**	DOK 1
24	B, D	**7.EE.1, 7.EE.3, 7.EE.4**	DOK 2
28	B	**7.EE.2, 7.RP.3**	DOK 2
32	C	**7.EE.3, 7.RP.3**	DOK 2
38	D	**7.EE.4b**	DOK 2
40	C	**7.EE.3**	DOK 2
42	Extended Response	**7.EE.4a, 7.EE.2, 7.EE.1**	DOK 3

NS			
1	B	**7.NS.1c**	DOK 1
7	A, D	**7.NS.2a, 7.NS.2b**	DOK 1
8	D	**7.NS.1a**	DOK 2
19	C	**7.NS.3**	DOK 1
23	A	**7.NS.1b, 7.NS.1c**	DOK 2
27	A	**7.NS.1b, 7.NS.1c**	DOK 3
30	D	**7.NS.2c**	DOK 1
34	D	**7.NS.2d**	DOK 1
37	B	**7.NS.1d**	DOK 2
41	Extended Response	**7.NS.3 7.G.4, 7.G.6, 7.RP.3**	DOK 3

G			
10	C	**7.G.4**	DOK 2
13	B	**7.G.1, 7.G.4**	DOK 2
17	B	**7.G.1, 7.RP.2b**	DOK 1
31	B	**7.G.5**	DOK 2
41	Extended Response	**7.NS.3 7.G.4, 7.G.6, 7.RP.3**	DOK 3

SP			
4	A	**7.SP.7**	DOK 2
12	C	**7.SP.3**	DOK 2
14	A	**7.SP.5**	DOK 1
25	B	**7.SP.8b**	DOK 1
35	C	**7.SP.7**	DOK 1

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