


# PRACTICE TEST 2018 #2

1. Which of the following diagrams is the correct solution to the equation  $4(x-2) = 2(3x-1)$ ?

A.   $+ X = -1$

B.   $+ X = +1$

C.   $X = -3$

D.   $X = 4$

$$4(x-2) = 2(3x-1)$$

$$4x - 8 = 6x - 2$$

$$-8 = 2x - 2$$

$$-6 = 2x \quad (x = -3)$$

2. What is the value of  $x$  in the equation  $2(x+5) = 5$ ?

A. -5

B.  $-\frac{5}{2}$

C.  $\frac{5}{2}$

D. 5

$$2(x+5) = 5$$

$$2x + 10 = 5$$

$$2x = -5$$

$$x = -\frac{5}{2}$$

## Numerical Response

3. When the equation  $\frac{16}{x} = 4$  is simplified, the value of  $x$  is 4

$$\frac{16}{x} = 4(x)$$

$$x = 16/4 = 4$$

Use the following information to answer the next question.

0, 2, -6, -10

4. Which two of the given numbers belong to the solution set of  $-3 < x + 2$ ?

A. 0 and 2

B. 2 and -6

C. -6 and -10

D. 0 and -10

$$-3 < x + 2$$

• Right away we can tell that -6 and -10 could not be solutions because

$$(-3 < -6 + 2) \text{ is not true and}$$

$$(-3 < -10 + 2) \text{ is not true}$$

$$0 \rightarrow -3 < 0 + 2$$

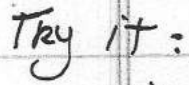
$$3 < 2$$

$$2 \rightarrow -3 < 2 + 2$$

$$-3 < 4$$

When  
x or %  
by negative  
number

Switch the direction of the inequality



- A.  $-5x + 6 \geq 26$   
**B.  $-5x + 6 \leq 26$**   
 C.  $-5x + 6 \geq -26$   
 D.  $-5x + 6 \leq -26$

$$A) -5x + 6 \geq 26$$

$$\frac{-5x}{-5} \geq \frac{20}{-5}$$

$x \leq -4$  NOT A SOLUTION

$$B) -5x + \cancel{6} \leq \cancel{26} \Rightarrow \frac{-5x}{\cancel{-5}} \leq \frac{20}{\cancel{-5}} \Rightarrow \underline{x \geq -4}$$

Right  
Solution

75

Enrico needs an 80% average over five subjects in order to qualify for a scholarship. His marks for the first four subjects are 79%, 86%, 83%, and 77%.

### Numerical Response

6. What mark must Enrico get in the fifth subject to earn the scholarship? 75 %

7. What are the coefficients of the variable terms in the expression  $5x - y - 1$ ?

A. 1

**B.** 0 and 1

C. 3 and 1

**D. 5 and -1**

- implies either  $\geq$  or  $\leq$
- the arrow goes towards the right, so it must be " $\geq$ "
- it starts on -4

So solution is  $x \geq -4$

- Let's try substitution:

$$A) -5(-4) + 6 \geq 26 \quad 20 + 6 \geq 26 \quad 26 \geq 26$$

$$B) -5(-4) + 6 \leq 26 \quad 20 + 6 \leq 26$$

c)  $-5(-4) + 6 \geq -26$  It seems like

$$0)^x - 5(-4) + 6 \leq -26 \quad \text{A is the answer}$$

- Set up the average:

$$80 = \frac{x + 79 + 86 + 83 + 77}{5}$$

$$80 = \frac{x + 325}{5}, \text{ and solve for } x:$$

$$5(80) = \frac{(x + 325)}{5} \cdot 5$$

$$\begin{array}{r} 400 = x + 325 \\ - 325 \\ \hline x = 75 \end{array}$$

Remember :  $2x^2$  coefficient

$5x \rightarrow 5$

$$-y \rightarrow -1$$

8. The equation  $x^2 - 4 = 21$  is represented by which of the following statements?

A. A number minus four equals twenty-one.

→ this would be  $x - 4 = 21$

B. A number times two minus four equals twenty-one.

→ this would be  $x \cdot 2 - 4 = 21$

C. A number times itself minus four equals twenty-one.

→ this would be  $(x \cdot x) - 4 = 21$   
 $\hookrightarrow \underbrace{x^2 - 4 = 21}$

D. A number multiplied by itself three times then divided by four equals twenty-one.

→ this would be  $(x \cdot x \cdot x) / 4 = 21$

9. Which of the following expressions is the simplified form of  $(9s - 3r + t) - (s - r - t)$ ?

A.  $8s - 2r$

B.  $8s - 4r$

C.  $8s - 2r + 2t$

D.  $8s - 4r + 2t$

→ "Add the opposite"

To simplify is to group "like" terms

• Rewrite after "adding the opposite"

$$(9s - 3r + t) - s + r + t$$

$$= \underbrace{9s - s}_{8s} - \underbrace{3r + r}_{-2r} + \underbrace{t + t}_{2t}$$

10. When  $(3x^2 - 4xy + 2yz) + (4xy + 5yz - 2x^2) + (x^2 - 5xy - 3yz + x)$  is simplified, what is the resulting expression?

A.  $x^2 - 13xy + 4yz$

B.  $3x^2 - 5xy + 4yz$

C.  $2x^2 - 5xy + 4yz + x$

D.  $2x^2 - 13xy + 4yz + x$

• When "grouping" terms, you

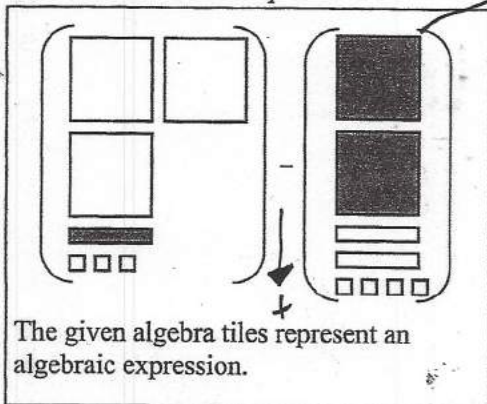
can only add or subtract

like terms → like terms have same variable and exponent

Rewrite:

$$\begin{aligned} & (3x^2 - 4xy + 2yz) + (4xy + 5yz - 2x^2) + (x^2 - 5xy - 3yz + x) \\ & 3x^2 - 2x^2 + x^2 - 4xy + 4xy - 5xy + 2yz + 5yz - 3yz + x \\ & \quad 4x^2 - 2x^2 - 9xy + 4xy + 7yz - 3yz + x \\ & \quad \quad \quad \underbrace{2x^2 - 5xy + 4yz + x} \end{aligned}$$

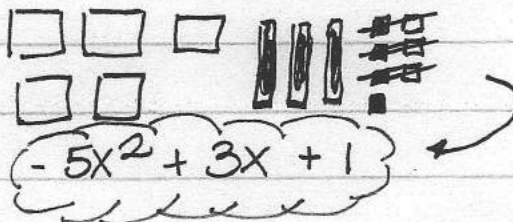
Use the following information to answer the next question.



becomes



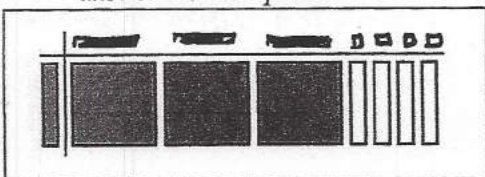
• Group and make zero pairs



11. A simplified form of the algebraic expression represented by the algebra tiles is

A.  $-5x^2 + x + 3$   
 B.  $-5x^2 + 3x + 1$   
 C.  $-3x^2 + 2x + 5$   
 D.  $-3x^2 + 5x + 2$

Use the following information to answer the next question.



12. What is the other factor in this arrangement of algebra tiles?

A.  $x^2 + x + x + 1$   
 B.  $x^2 + x + x + 1$   
 C.  $x^2 + x + x + 1$   
 D.  $x^2 + x + x + 1$

$\text{dark rectangle} = +x$   $\text{dark square} = (-)$



→ for this to be, a (+) is multiplied by another (+)

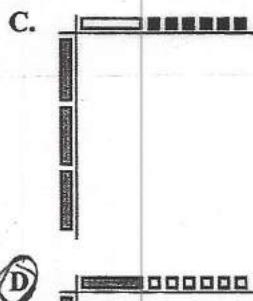
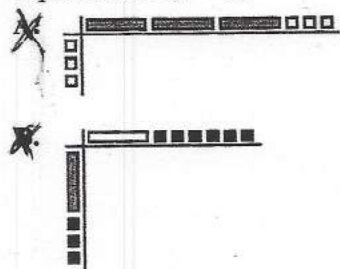


→ for this to be, a (+) must be multiplied by a (-)

SO:  $(+x)(x+x+x+(-4))$   
 $(x)(3x+(-4)) = 3x^2 - 4x$



13. Which of the following diagrams shows the correct setup of the grid for the expression  $3x(x-6)$ ?



D

$3x \rightarrow$  (on the left)

$x-6$

→ (on top)



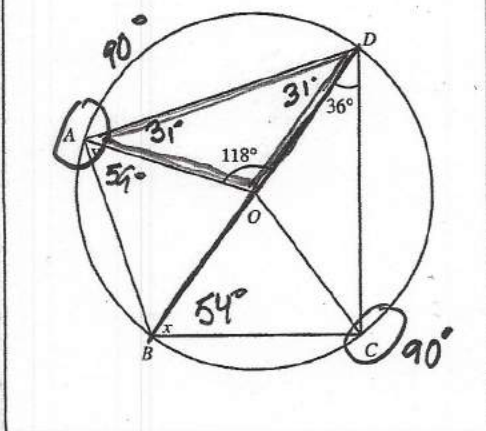
# Numerical Response

14. When the expression  $9n^4 + 36n^3 + 15n^2 + 21n$  is divided by  $3n$ , what is the coefficient of the  $n^2$ -term in the quotient?

coefficient is 12

Use the following information to answer the next question.

BD is a diameter of the circle. Point O is the center of the circle.



15. The sum of angles  $x$  and  $y$  is  
 A.  $46^\circ$       B.  $67^\circ$   
 C.  $113^\circ$       D.  $134^\circ$

• When dividing Powers of equal bases, subtract the exponents.

$$\frac{9n^4 + 36n^3 + 15n^2 + 21n}{3n}, \text{ Rewrite}$$

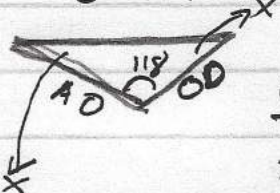
$$\frac{9n^4}{3n} + \frac{36n^3}{3n} + \frac{15n^2}{3n} + \frac{21n}{3n}$$

$$3n^3 + 12n^2 + 5n + 7$$

Remember that the inscribed angle of the diameter is  $90^\circ$ !

$$\angle A = 90^\circ$$

$$\angle C = 90^\circ$$



OD and OA = Radii, which makes this triangle an isosceles triangle with 2 equal sides

$$180^\circ = 118 + 2x$$

$$180^\circ - 118 = 2x \Rightarrow 62^\circ = 2x \Rightarrow x = 31^\circ$$

$$\angle A = 90^\circ = y + 31^\circ$$

$$y = 90^\circ - 31^\circ = 59^\circ$$

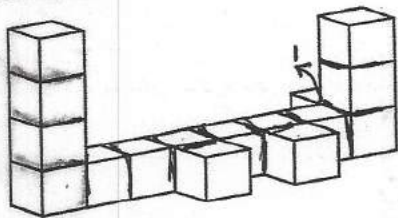
$$\angle C = 90^\circ, \text{ so } 180^\circ = 90^\circ + 36^\circ + x$$

$$x = 180^\circ - (90^\circ + 36^\circ) = 180^\circ - 126^\circ$$

$$\text{so } x^\circ + y^\circ = 54^\circ + 59^\circ = 113^\circ$$

$$x = 54^\circ$$

The scale model is used to represent a building for the redevelopment of the downtown business center. It is built with 6 cm cubes.



16. Excluding the bottom faces, what is the surface area of the model of the building?

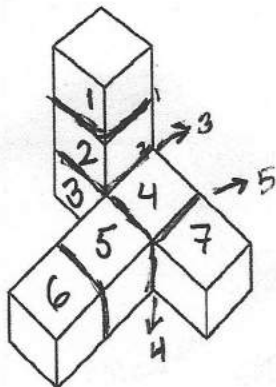
- A. 1 512 cm<sup>2</sup>    **B. 1 980 cm<sup>2</sup>**  
C. 2 104 cm<sup>2</sup>    D. 2 376 cm<sup>2</sup>

total area = 55 faces  $\times$  36 cm<sup>2</sup>/face  
= 1980 cm<sup>2</sup>

- EACH FACE HAS AN AREA OF =  $6 \times 6$  cm<sup>2</sup>
- THERE ARE 16 cubes
- FACES ON 16 cubes =  $16 \times 6 = 96$  faces
- THERE ARE 15 OVERLAPS  
15 overlaps  $\times$  2 = 30 faces
- So total faces =  $(96 - 30) = 66$  faces
- BUT: the bottom faces are not counted (11 faces)  $\rightarrow 66 - 11$  faces  
 $\rightarrow$  55 faces

17

This composite object is built with 5 cm cubes.



### Numerical Response

The surface area of the given object is \_\_\_\_\_ cm<sup>2</sup>. **750**

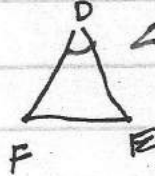
- AREA OF EACH FACE =  $(5 \times 5)$  cm<sup>2</sup> = 25 cm<sup>2</sup>
- THERE ARE 7 CUBES
- FACES (total) =  $7 \times 6$  faces = 42
- OVERLAPS = 6  
overlaps faces =  $6 \times 2 = 12$
- Area (total) =  $42 - 12$   
faces  $\rightarrow$  overlaps  
 $\downarrow$   
30 faces
- Total area = 30 faces  $\times$  25 cm<sup>2</sup>/face  
= 750 cm<sup>2</sup>

18. To guarantee that  $\triangle ABC$  is similar to  $\triangle DEF$ , a student can verify that  $\angle A = \angle D$  and that

- A.  $\angle C = \angle F$  TRUE**  
B. AB is proportional to DE NOT TRUE  
C. BC is proportional to EF NOT TRUE  
D.  $\angle B + \angle C = \angle E + \angle F$  NO

$\rightarrow$  AB and DE ARE NOT PROPORTIONAL

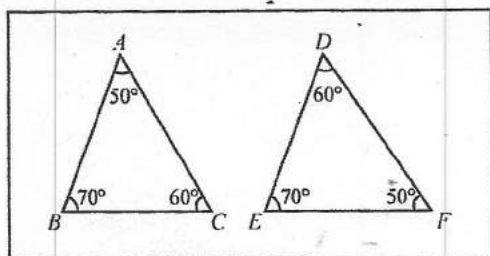
- Similar Triangles EITHER have Same angles OR same Ratios.



$\angle A = \angle D$

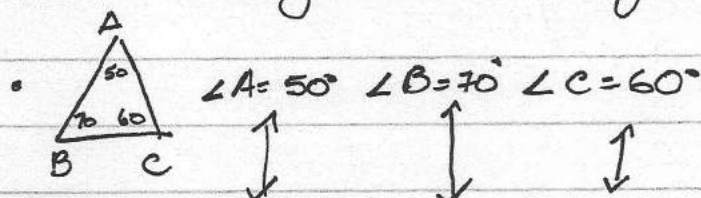
$$\frac{AB}{DE} = \frac{BC}{EF} = \frac{CA}{FD}$$

(D)



19. In the diagram shown, in order to illustrate the properties of similar triangles it is best to state that  $\triangle ABC$  is similar to
- A.  $\triangle DEF$       B.  $\triangle DFE$   
C.  $\triangle EDF$       **D.  $\triangle FED$**

• Similar triangles  $\rightarrow$  same angles



• then  $\angle F = 50^\circ$   $\angle E = 70^\circ$   $\angle D = 60^\circ$

so  $\triangle ABC$  must be similar to  $\triangle FED$

• Similar Polygons  $\rightarrow$  corresponding sides have equal Ratios

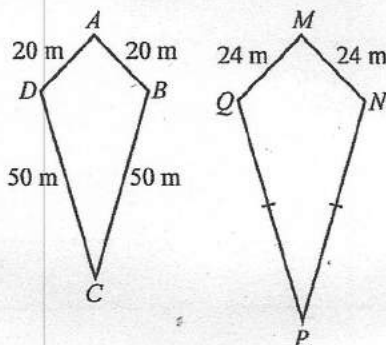
• Since  $MNPQ$  is an enlargement, S.F.  $> 1$

$$\text{S.F.} = \frac{MN}{AB} = \frac{MQ}{AD} = \frac{24\text{m}}{20\text{m}} = 1.2$$

• To calculate the "new" length, we multiply the "old" length by S.F.

$$\bullet QP = DC \times 1.2 = 50 \times 1.2 = 60\text{m}$$

In order to play a particular game with Grade 6 students, a teacher places four markers as shown in quadrilateral  $ABCD$ . To play the game with Grade 9 students, the teacher enlarges the field by placing the four markers as shown in quadrilateral  $MNPQ$ .



### Numerical Response

20. Given that quadrilateral  $ABCD$  is similar to quadrilateral  $MNPQ$ , the distance from marker  $Q$  to marker  $P$  is 60 m.

Use the following information to answer the next question.

The following question was asked to the members of SPCPP (the Society of People who Consider Pluto to be a Planet): "What is your favourite planet in the solar system?"

21. The results to this question will **not** lead to representative results because the question
- A.** is addressed to a biased sample of people  
B. deals with a private matter  
C. is not culturally sensitive  
D. is not worded properly

Eliminate the options that don't make sense

- B**  $\rightarrow$  not a private matter  
**C**  $\rightarrow$  pluto is assumed here not to be related to culture  
**D**  $\rightarrow$  no problem with the wording, but it is biased

• is addressed to Pluto philes

S.F. = New/Old

(60)

(A)

A survey is being conducted to test people's reactions to a new smoothie store that is being put in the mall food court. People are offered a taste of a selection of smoothies. Then, they are asked to fill out a short questionnaire about the sample beverage and the location of the new store in the food court.

22. Which of the following groups of people would **most likely** represent the population targeted by the survey?

A. Employees of the other food vendors  
B. People in the health food store  
☒ C. People in the food court  
D. Shoppers on the street

A. Makes no logical sense

B. this is a small sample and does not represent the population

→ C these people are assumed to go to the food court often. these are the target

Pamela wants to survey people in her community to see if they think a skating rink should be included in the construction of a new family centre.

23. Which of the following sample populations would provide Pamela with the **most meaningful** data?

A. All parents living in the community  
B. All children attending the community school  
C. A representation of ringette and hockey players  
☒ D. A representation of children and adults living in the community

→ excludes the younger potential users

→ excludes the older users

→ Biased! they are not a true representation of the population

Cynthia has just been elected student union president. The first issue on her list of improvements for the school is to replace unhealthy snack options in all vending machines with healthy ones. Before she follows through with this change, she wants to ask students from different grade levels which types of healthy snacks they would like to have. She formulates a question that she can ask to get the information she needs.

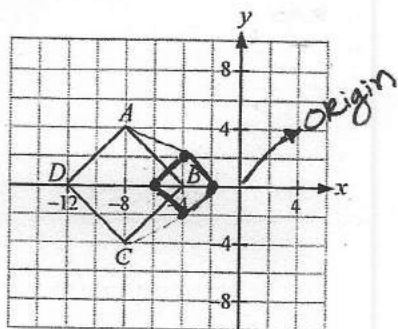
the next step should be identifying the group of people to be surveyed.

24. Which of the following steps should Cynthia implement as the next step in her investigation?

☒ A. Select and identify a population or sample to be investigated.  
☐ B. Select and identify a method of collecting data.  
C. Display and analyze the data.  
D. Collect and record the data.

(B) is the answer chosen by book

Figure  $ABCD$  is dilated by a scale of  $\frac{1}{4}$  with the centre of dilation at the origin to form figure  $A'B'C'D'$ .



25. What are the coordinates of figure  $A'B'C'D'$ ?

- A.  $A'(-4, 8)$ ,  $B'(0, 4)$ ,  $C'(-4, 0)$ ,  $D'(-8, 0)$
- ☒ B.  $A'(-2, 1)$ ,  $B'(-1, 0)$ ,  $C'(-2, -1)$ ,  $D'(-3, 0)$
- C.  $A'(-12, 0)$ ,  $B'(-8, -4)$ ,  $C'(-12, -8)$ ,  $D'(-16, -4)$
- D.  $A'(-32, 16)$ ,  $B'(-16, 0)$ ,  $C'(-32, -16)$ ,  $D'(-24, 0)$

Remember: a fraction of something  $\rightarrow$  multiply!

• Scale of  $\frac{1}{4}$  means 0.25 sf, or  $\frac{1}{4}$  smaller

$$A(-8, 4) = A'(-8 \times \frac{1}{4}, 4 \times \frac{1}{4})$$

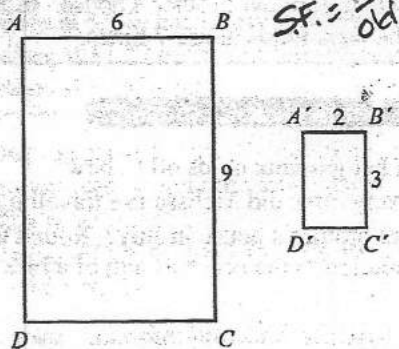
$$A'(-2, 1)$$

$$B(-4, 0) = B'(-4 \times \frac{1}{4}, 0) = B'(-1, 0)$$

$$C(-8, -4) = C'(-8 \times \frac{1}{4}, -4 \times \frac{1}{4}) = C'(-2, -1)$$

$$D(-12, 0) = D'(-12 \times \frac{1}{4}, 0) = D'(-3, 0)$$

$A'B'C'D$  is the reduced image of figure  $ABCD$ .



26. What is the scale factor of this reduction?

- A. 4
- B. 3
- ☒ C.  $\frac{1}{3}$
- D.  $\frac{1}{4}$

• Reduced  $\rightarrow$  S.F. is  $< 1$ .

$$\frac{A'B'}{AB} = \frac{2}{6} = \frac{1}{3}$$

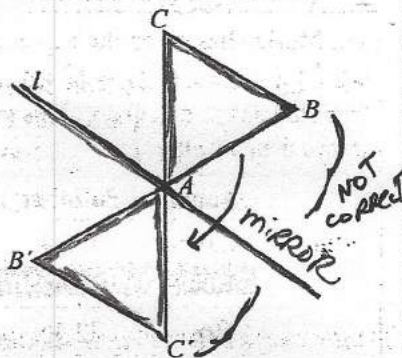
$$\frac{B'C'}{BC} = \frac{3}{9} = \frac{1}{3}$$

it checks

• So, Scale factor =  $\frac{1}{3}$

Use the following information to answer the next question.

Triangle ABC is transformed into triangle AB'C'.

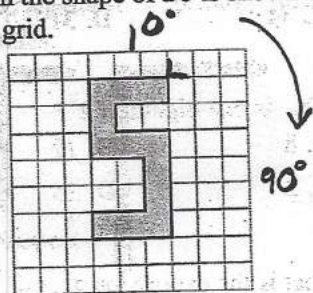


27. This transformation is an example of a
- A. dilatation
  - B. translation
  - ☒ C. rotation about point A
  - ☒ D. reflection across line l

could be

- this is a Reflection; the image is a "mirror" image of the original
- the Reflection, the mirror, is across line l. BUT, then B should be an image across from B!
- But because B' and C' are not across from B and C respectively, it must be a Rotation about A (180°)

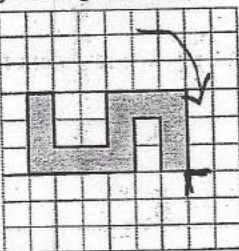
A figure in the shape of a 5 is shown on the given grid.



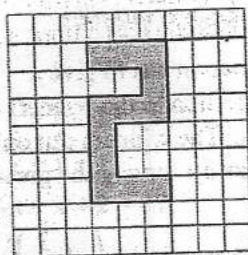
A figure on a grid

28. Which of the following diagrams shows the given figure rotated 90° clockwise?

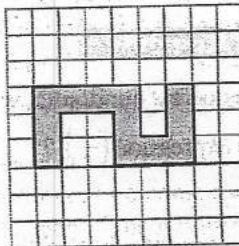
☒ A.



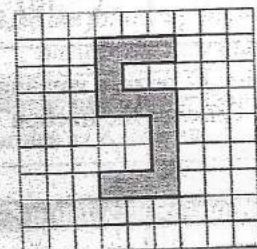
C.



B.



D.



29. The expression  $3 \times 3 \times 3 \times 3$  can also be written as

- A. 13
- B. 43
- ☒ C.  $3^4$
- D. 312

this is a mistake as it should say

•  $3 \times 3 \times 3 \times 3$  is Repeated multiplication  
 $3^4$

☒ A.

30. What is one-eighth of  $2^6$ ?

- ☒ A. 8
- B. 12
- C. 24
- D. 25

•  $\frac{1}{8}$  of  $2^6$  is:

$$\frac{1}{8} \cdot 2^6 = \frac{2^6}{8}$$

• 8 is  $2^3$ . then:

$$\frac{2^6}{2^3} = 2^{6-3} = 2^3$$

8

31. What is the expression  $4^2 \times 4^{10} \div 4^9$  as a single power?

A.  $4^{21}$  B.  $4^{11}$   
C.  $4^3$  D.  $4^1$

$$\rightarrow 4^2 \times 4^{10} = 4^{10+2} = 4^{12}$$

$$\cdot \frac{4^{12}}{4^9} = 4^{12-9} = 4^3$$

32. The expression  $\left(\frac{9}{5}\right)^2$  is equivalent to

A.  $\frac{9}{5}$  B.  $\frac{81}{5}$   
C.  $\frac{18}{10}$  D.  $\frac{81}{25}$

$$\rightarrow \left(\frac{9}{5}\right)^2 = \frac{9^2}{5^2} = \frac{81}{25}$$

### Numerical Response

33. Rounded to the nearest hundredth, what is the value of the expression  $\left(\frac{2}{5}\right)^2$ ? 0.16

$$\cdot \left(\frac{2}{5}\right)^2 = \frac{2}{5} \times \frac{2}{5} = \frac{4}{25}$$

Use the following information to answer the next question.

A local radio station has to give a skill-testing question to the winners of its on-air contests. The winners can only claim their prize by solving the given expression.

$$2\frac{3}{5} + 4.4 + (-5.2) + \left(-1\frac{3}{10}\right)$$

34. In order to claim the prize, a winning contestant must provide the fraction

A.  $-\frac{1}{10}$  B.  $-\frac{1}{2}$   
C.  $\frac{1}{2}$  D.  $1\frac{1}{10}$

• Always easier to work with denominators base of 10.

So:

$$\left(\frac{4}{25}\right) \times \left(\frac{4}{4}\right) = \frac{16}{100} = 0.16$$

$$\cdot \frac{13}{5} + 4.4 + (-5.2) + \left(-1\frac{3}{10}\right)$$

↓  
convert to fraction

$$\frac{13}{5} + \frac{44}{10} + \left(-\frac{52}{10}\right) + \left(-\frac{13}{10}\right)$$

↓ convert to fraction with denominator of 10

$$\left(\frac{13}{5}\right) \frac{2}{2} = \frac{26}{10}$$

Then:

$$\frac{26}{10} + \frac{44}{10} + \left(-\frac{52}{10}\right) + \left(-\frac{13}{10}\right)$$

$$\rightarrow \frac{70}{10} + \left(-\frac{65}{10}\right) = \frac{5}{10} = \frac{1}{2} = 0.5$$

17.5

Melissa uses  $\frac{1}{16}$  of a tank of gas to travel to and from her brother's house. In July, she went to his house 7 times.

### Numerical Response

35. If her gas tank holds 40 L, how many litres did Melissa use travelling to her brother's house in July? Round the solution to the nearest tenth of a litre.

•  $\frac{1}{16}$  of a tank to her brother's

•  $\frac{1}{16} \times 7 = \frac{7}{16}$  of a tank for 7 times

•  $\frac{7}{16} \times 40 = \frac{40 \times 7}{16} = \frac{280}{16} = 17.5 \text{ L}$

$\therefore 17.5 \text{ L}$

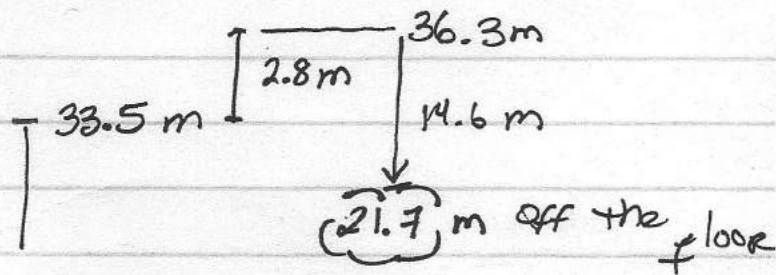
21.7

A hot air balloon is 33.5 m above the ground. From this point, it rises 2.8 m more and then falls 14.6 m.

### Numerical Response

21.7 m

36. How far above the ground is the hot air balloon now? \_\_\_\_\_ m



BEDMAS

Ms. Morley has given the expression  $8.1 - 2.4 \times 2.4 - (-3)^2 + 6^2 \div 3 \times 2.15$  to four students to calculate. This table shows their results.

Name	Solution
Gavin	37.14
Noah	30.66
Ross	32.46
Kaitlin	19.14

37. Which student calculated the expression correctly?

A. Gavin      B. Noah  
C. Ross      ☒ D. Kaitlin

Exponent

①  $8.1 - 2.4 \times 2.4 - 9 + 36^{\frac{2}{3}} \times 2.15$

②  $8.1 - 2.4 \times 2.4 - 9 + 12 \times 2.15$   
Division

③  $8.1 - 5.76 - 9 + 25.8$   
Multiplication

④ From Left to Right

$2.84 + 16.8$

$(19.14)$

38. Using the correct order of operations, the equation representing the total cost of Josh's order is

~~A. total =  $(3 \times \$1.29) + (7 \times \$5.49) + (4 \times \$5.99)$~~

☒ B. total =  $(3 \times \$5.49) + (7 \times \$1.29) + (4 \times \$5.99)$

~~C. total =  $(3 \times \$5.49) + (7 \times \$5.99) + (4 \times \$1.29)$~~

D. total =  $(3 \times \$5.99) + (7 \times \$1.29) + (4 \times \$5.49)$

Josh bought supper for himself and his friends. He ordered three cheeseburger combos at \$5.49 each, seven ice cream sundaes at \$1.29 each, and four chicken combos at \$5.99 each.

• cheeseburgers =  $3 \times 5.49$

• Ice cream =  $7 \times 1.29$

• Chicken =  $4 \times 5.99$

B

39. If  $x$  is a rational number and satisfies the equation  $3x^2 = 147$ , what is the value of the principal square root of  $x^2$ ?

A. -49 B. -7

C. 7 D. 49

40. What is the smallest four-digit number that is a perfect square?

A. 1 004 B. 1 016

C. 1 024 D. 1 036

### Numerical Response

41. What rational number has a square root of 0.5?

0.25

$\sqrt{?} = 0.5$  means the number that is  $0.5 \times 0.5 = 0.25$

42. Using estimation, what is the square root of 75?

\* 9 too high  
\* 8 too low

B. 8.7

D. 7.9 below range

$\sqrt{64} \approx \sqrt{75} \approx \sqrt{81}$   
8 8.5 here 9

43. Rounded to the nearest hundredth, what is the square root of 726?

A. 26.94

B. 28.98

C. 30.91

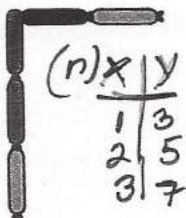
D. 36.92

$\sqrt{726} = 26.94$

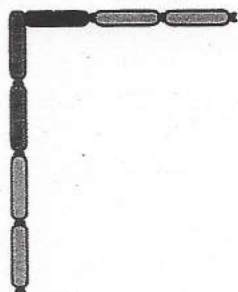
Toby made a pattern by forming shapes out of candies.



Shape 1



Shape 2



Shape 3

(n)	x	y
1	3	5
2	5	9
3	7	13

②

$2n$  is one term

- when  $n=1$ ,  $2(1) = 2$
- But the  $n=1$  term is 3, so we need to add 1

$$\therefore 2n + 1$$

Prove it:

$$n=1 \quad y = 2(1) + 1 = 3 \quad \checkmark$$

$$n=2 \quad y = 2(2) + 1 = 5 \quad \checkmark$$

44. Which of the following expressions can be used to represent the given pattern?

A.  $2n - 1$

B.  $2n + 1$

C.  $2n - 2$

D.  $2n + 2$

45. The sum of two consecutive numbers is 17. If one of the numbers is  $x$ , which of the following equations can be used to solve for the two numbers?

A.  $x + 1 = 17$   
 B.  $x + 2 = 17$   
 C.  $x + x + 1 = 17$   
 D.  $x + x + 2 = 17$

• consecutive means "following" each other

• If one number is  $x$  then the next number is  $x+1$

• then  $x + (x+1) = 17$

### Numerical Response

46. If Danielle has 119 marbles, how many marbles does Katherine have? 21

Danielle has 7 fewer than 6 times as many marbles as Katherine.

Katherine  $\rightarrow x$  marbles  
 Danielle  $\rightarrow 6x - 7$

$$6x - 7 = 119 \rightarrow 6x = 126 = 21 = x$$

then Katherine have 21 marbles

Use the following information to answer the next question.

The table of values for the linear relationship between  $x$  and  $-3x$  is given

$x$	$-3x$
-2	6
-1	3
0	0
1	-3
2	-6

• as  $x$  increases by 1,  $y(-3x)$  decreases by 3

• this means the graph decreases towards the right

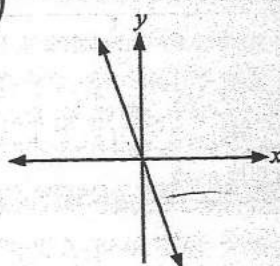
$\downarrow$   
 B and D are eliminated.

• Between A and C, C has the wrong values.

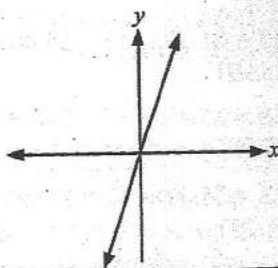
$\therefore \{A\}$

47. Which of the following graphs illustrates this information?

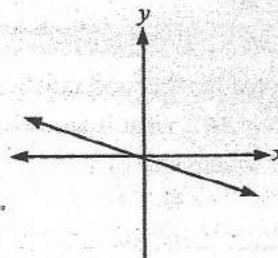
A.



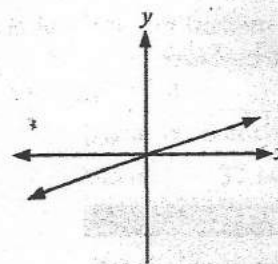
B.



C.

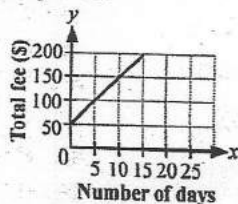


D.

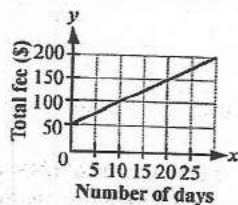


48. The membership fee at a particular health club switched from \$50 per month plus \$5 per day of use to a flat fee of \$10 per day of use. Which graph represents the new monthly fees?

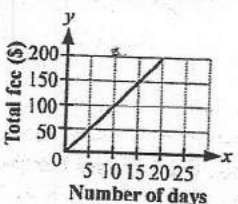
A.



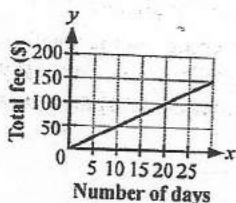
B.



C.



D.



\$10 per day

(x) Days | \$ (y)

$$+1 \left( \begin{array}{c|c} 1 & 10 \\ 2 & 2 \times 10 = 20 \end{array} \right) + 10$$

$$3 \mid 3 \times 10 = 30 \quad 5 \mid 50$$

- This is a linear relation since  $x$  shows a pattern, and  $y$  shows a pattern.
- Since the relation has 2 variables, the graph is oblique.
- Since  $x$  increases and  $y$  increases, the graph goes up to the right.

Use the following information to answer the next question.

A weather forecaster predicts a 10% chance of snowfall on October 31 and predicts snowfall is 3 times as likely the next day, November 1.

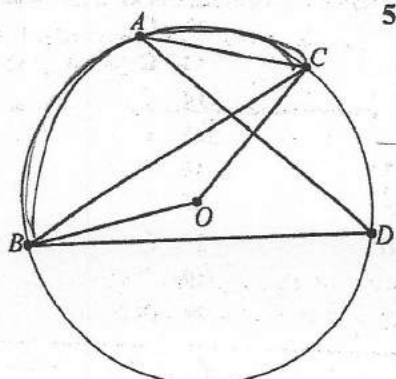
49. What is the probability that it will not snow on November 1?

A. 30%      B. 60%  
C. 70%      D. 80%

- 10% Experimental probability
- 3 times as likely  $\rightarrow$  30%
- This means 70% chance it will not snow

50. Which arc is subtended by the central angle in the given diagram?

A. AB      B. AC  
C. BC      D. BD



- The central angle  $\angle BOC$  is subtended by the minor arc  $\widehat{BC}$