



# ANet Interim 3 Learning Items

Subject: Mathematics

State: California

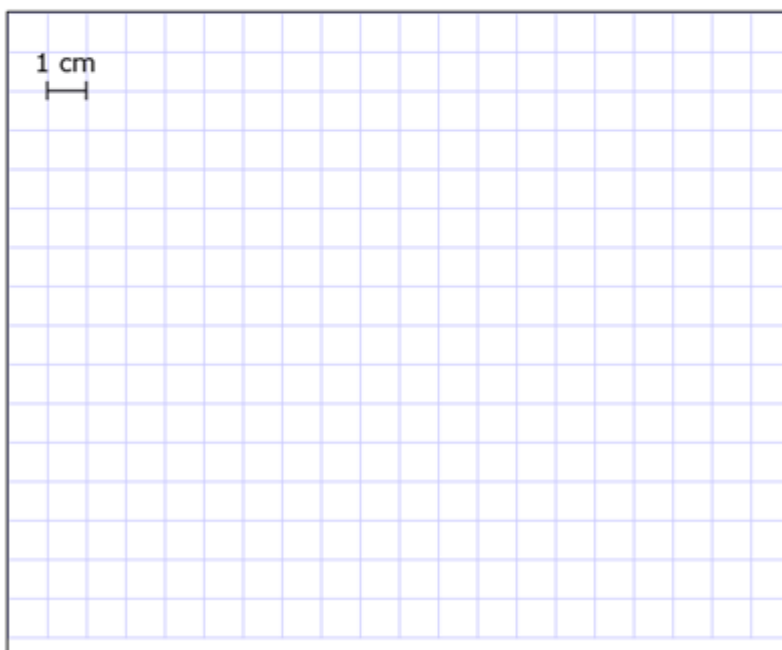
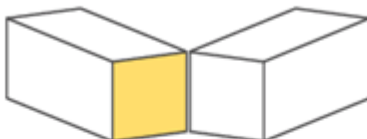
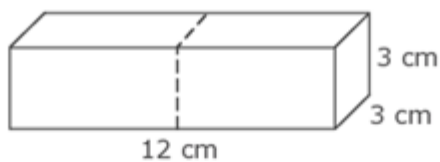
Student Name:\_\_\_\_\_

Teacher Name:\_\_\_\_\_

School Name:\_\_\_\_\_

1 The stick of butter below is shaped like a rectangular prism. Carla cuts the stick along the dotted line to create two identical prisms.

Use the grid to draw the shaded part of the stick of butter.





2 Determine if each of these statements is always true, sometimes true, or never true. Circle your responses.

The sum of the measures of two complementary angles is  $90^\circ$ .

Always True      Sometimes True      Never True

Vertical angles are also adjacent angles.

Always True      Sometimes True      Never True

Two adjacent angles are always complementary.

Always True      Sometimes True      Never True

If the measure of an angle is represented by  $x$ , then the measure of its supplement is represented by  $180 - x$ .

Always True      Sometimes True      Never True

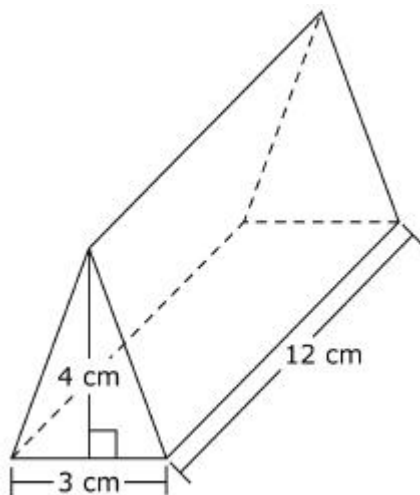
If two lines intersect, each pair of vertical angles is also supplementary.

Always True      Sometimes True      Never True

- 3 Determine whether each statement is true for all cases, true for some cases, or not true for any case.

	<b>True for all cases</b>	<b>True for some cases</b>	<b>Not true for any cases</b>
Two vertical angles form a linear pair.			
If two angles are supplementary and congruent, then they are right angles.			
The sum of two adjacent angles is $90^\circ$ .			
The measure of any exterior angle of a triangle is greater than every interior angle of the triangle.			

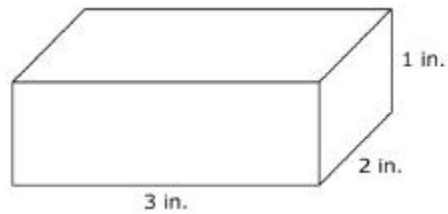
- 4 Look at the triangular prism below. Each triangular face of the prism has a base of 3 centimeters (cm) and a height of 4 cm. The length of the prism is 12 cm.



What is the volume, in  $\text{cm}^3$ , of this prism?

- (A)  $36 \text{ cm}^3$
- (B)  $72 \text{ cm}^3$
- (C)  $144 \text{ cm}^3$
- (D)  $168 \text{ cm}^3$

- 5 Using copies of the rectangular prism below, Amanda wants to create a new prism with a **surface area** of between 44 square inches and 54 square inches.

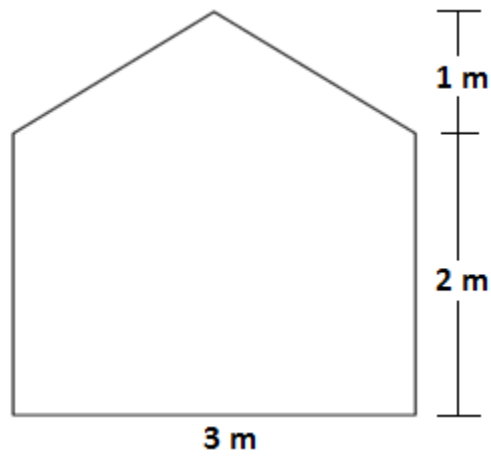


Amanda will stack additional such prisms vertically to create her new prism. How many prisms (in total) will she need to create a prism with a surface area between  $44 \text{ in}^2$  and  $54 \text{ in}^2$ ?

- (A) 2 prisms
- (B) 3 prisms
- (C) 4 prisms
- (D) 8 prisms

6 John needs to paint one wall in his house. He knows that 1 can of paint covers an area of 24 square feet. John used a meter stick to measure the dimensions of the wall.

[1 meter is approximately 39 inches.]



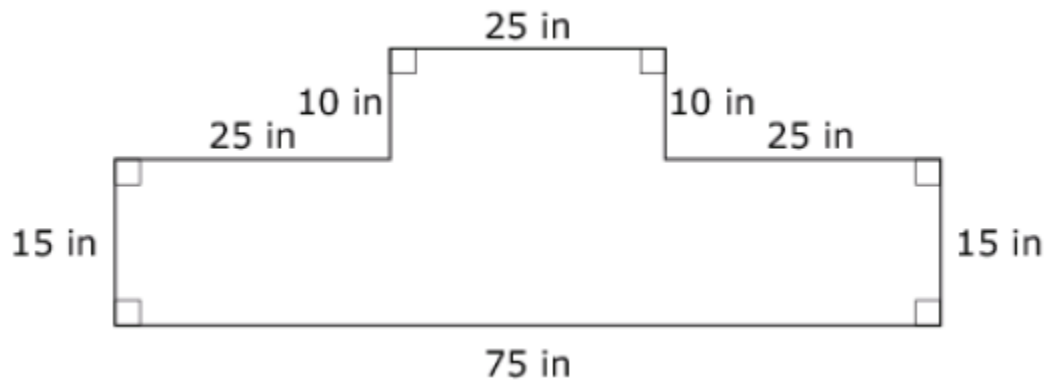
What is the least number of paint cans John will need to paint the entire wall?

- (A) 3 cans
- (B) 4 cans
- (C) 6 cans
- (D) 10 cans

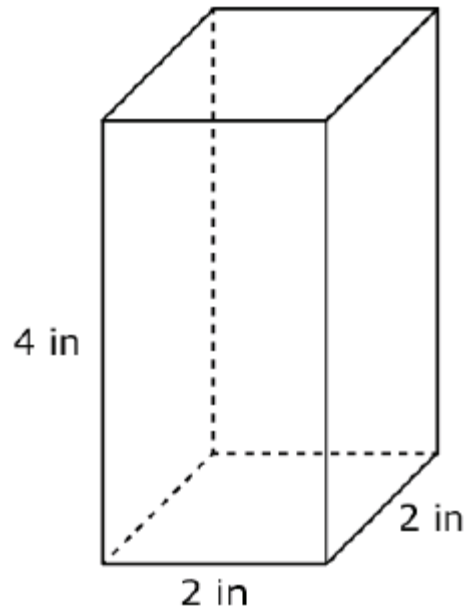


- 7 The figure shown is created by joining two rectangles.

Write the area, in square inches, of the figure.



- 8 A company makes two sizes of boxes shaped like rectangular prisms. The large box is 16 inches tall, 10 inches wide, and 10 inches long. The drawing shows the dimensions of the small box.



**Part A**

What is the maximum number of small boxes that can fit inside the large box?

Write your answer below.

**Part B**

The company plans to increase the width and length of the large box by 4 inches each to create a new larger box. How many more of the small boxes will be able to fit inside this new larger box compared to the original large box?

Write your answer below.

9 Johnny uses a wheelbarrow to move planting soil to a delivery truck. The volume of planting soil that fits in the wheelbarrow measures 2 feet by 3 feet by 1.5 feet. The delivery truck measures 11 feet by 8 feet and is 6 feet tall. Johnny puts planting soil in the delivery truck until the truck is 70% full.

What is the minimum number of times Johnny needs to use the wheelbarrow until the delivery truck is 70% full?

Write your answer below.

10 Which sets of measurements could be the interior angle measures of a triangle?

Select **each** correct answer.

(A)  $10^\circ$ ,  $10^\circ$ ,  $160^\circ$

(B)  $15^\circ$ ,  $75^\circ$ ,  $90^\circ$

(C)  $20^\circ$ ,  $80^\circ$ ,  $100^\circ$

(D)  $35^\circ$ ,  $35^\circ$ ,  $105^\circ$

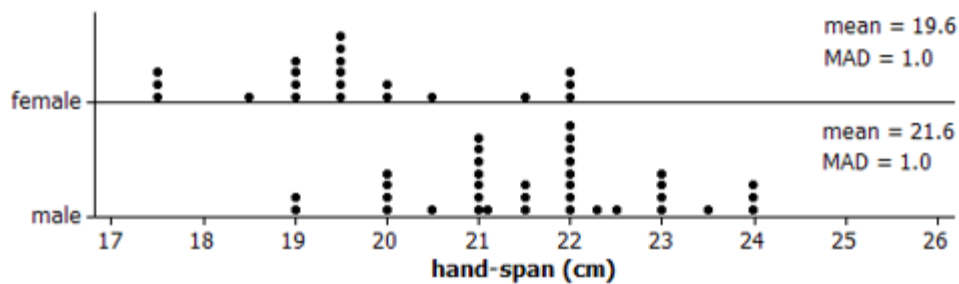
(E)  $60^\circ$ ,  $60^\circ$ ,  $60^\circ$

**11** Which sets of measurements could be the side lengths of a triangle?

Select **each** correct answer.

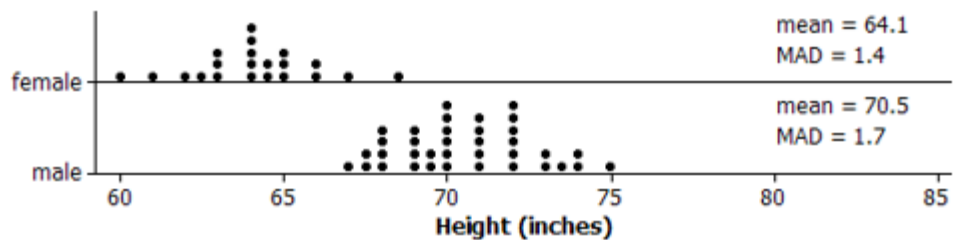
- (A) 3 cm, 3 cm, 3 cm
- (B) 4 cm, 8 cm, 13 cm
- (C) 5 cm, 9 cm, 14 cm
- (D) 6 cm, 7 cm, 8 cm
- (E) 7 cm, 7 cm, 10 cm

**12** Students in a random sample of 57 students were asked to measure their hand-spans (distance from outside of thumb to outside of little finger when the hand is stretched out as far as possible). The graphs below show the results for the males and females.



- a. Based on these data, do you think there is a difference between the population mean hand-span for males and the population mean hand-span for females? Justify your answer.


- b. The same students were asked to measure their heights, with the results shown below.



Are these height data more or less convincing of a difference in the population mean height than the hand span data are of a difference in population mean handspan? Explain.

- 13 A national dog show had two types of poodles. This table shows height data, in inches, for the two types of poodles.

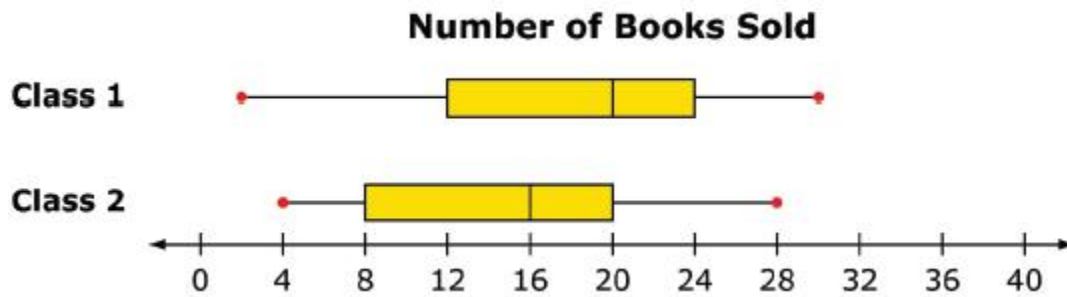
**Heights of Poodles**

 Type of Poodle	Number of Dogs	Mean Height (inches)	Variation in Height (inches)
Miniature Poodle	18	13	2
Standard Poodle	24	23	2

What number completes the sentence?

The difference, in inches, between the mean heights for the two types of poodles is \_\_\_\_\_ times the variation for either type.

- 14 The number of books sold by each student in two classes for a fundraiser is summarized by these box plots.



The principal concluded that there was more variability in the number of books sold by Class 1 than Class 2. Which statement is true about the principal's conclusion?

- (A) It is valid because the median for Class 1 is greater than the median of Class 2.
- (B) It is valid because the range for Class 1 is greater than the range for Class 2.
- (C) It is invalid because the minimum for Class 1 is less than the minimum for Class 2.
- (D) It is invalid because the interquartile range for Class 1 is less than the interquartile range for Class 2.

15 Mr. Axt trains a group of student athletes. He wants to know how they are improving in the number of push-ups they can do.

These dot plots show the number of push-ups each student was able to do last month and this month.



How much did the mean number of push-ups increase from last month to this month?

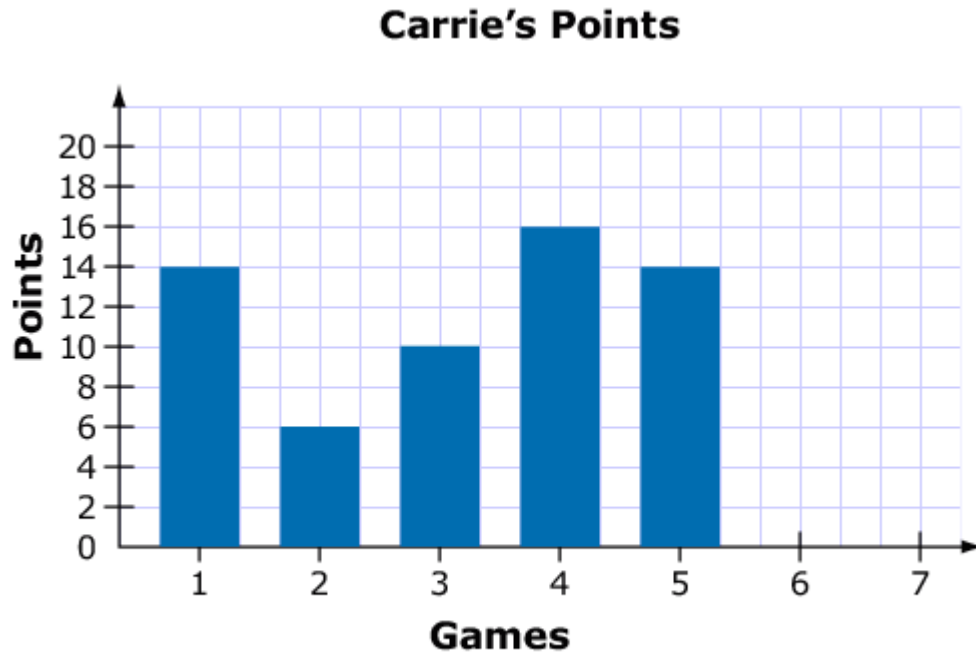
- (A) 2.75
- (B) 4.375
- (C) 7.5
- (D) There is not enough information given to answer the question.



**16** Carrie's basketball team has played 5 games. The number of points Carrie scored in each game is shown in the bar graph.

Determine possible point totals for games 6 and 7 so that the range of the data set increases, but the mean and median stay the same.

Finish the bar graph by drawing in the possible point values for Game 6 and Game 7.



**17** A representative sample of 50 students from a high school is surveyed. Each student is asked what science class he or she is taking.

This table shows the responses.

Science Class	Number of Students
Physics	6
Chemistry	10
Biology	18
Earth Science	4
Health Science	12

Select **all** of the statements that are valid based on the survey results.

- (A) About 20% of students at the high school are taking Chemistry.
- (B) About twice as many students are taking Health Science than are taking Physics.
- (C) For every 150 students we could predict that at least 18 of the students are taking Physics.
- (D) For every 25 students we could predict that at least 4 of the students are taking Earth Science.

18 A principal wants to know if students at a particular high school are in favor of a new dress code at their school. The principal is not able to ask the opinion of every student at the school, so she needs to select an appropriate sample of the students to represent the high school.

Select which sample of students the principal should choose.

- (A) Students randomly selected from a list of all students at the school.
- (B) Students sitting at randomly selected tables in the library.
- (C) Students she selects from the hallway between classes.
- (D) Students selected by the teachers.

19 Amanda asked a random sample of 40 students from her school to identify their birth month. There are 300 students at her school. Amanda's data are shown in this table.

**Student Birth Months**

Birth Month	Number of Students	Birth Month	Number of Students
January	3	July	4
February	0	August	3
March	3	September	2
April	10	October	2
May	4	November	3
June	3	December	3

Which of these statements is **best** supported by the data?

- (A) Exactly 25% of the students in Amanda's school have April as their birth month.
- (B) There are no students in Amanda's school that have a February birth month.
- (C) There are probably more students at Amanda's school with an April birth month than a July birth month.
- (D) There are probably more students at Amanda's school with a July birth month than with a June birth month.

**20** A representative sample of 50 students from a high school is surveyed. Each student is asked which science class he or she is taking.

This table shows the responses:

Science Class	Number of Students
Physics	6
Chemistry	10
Biology	18
Earth Science	4
Health Science	12

For each of the following statements, select TRUE or FALSE to indicate if the statement is accurate.

TRUE or FALSE: Twice as many students are taking Health Science as are taking Physics.

TRUE or FALSE: 20% of students at the high school are taking Chemistry.

TRUE or FALSE: In a group of 25 students, it is expected that 4 of the students are taking Earth Science.

TRUE or FALSE: In a group of 150 students, it is expected that 18 of the students are taking Physics.

