Gr. 6→7

Name: _____ Date: _____

End-of-Course Test A

100
Suggested Time: 90 min

Multiple Choice (20 × 2 points = 40 points)

Fill in the circle next to the correct answer.

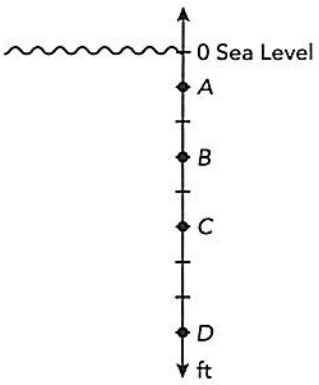
1. What is the greatest common factor of 36 and 126?

Ⓐ 6 Ⓑ 9 Ⓒ 12 Ⓓ 18

2. Find the value of $7^2 - \sqrt{16} + 5^3$.

Ⓐ 9 Ⓑ 21 Ⓒ 166 Ⓓ 170

3. The figure shows the depths beneath the surface of the ocean. If each interval on the scale represents 5 feet, at what point on the scale is a diver if he is 15 feet beneath the surface of the ocean?



Ⓐ A
Ⓑ B
Ⓒ C
Ⓓ D

4. Which of these statements are correct?

(i) $25 < -25$ **(ii)** $|-23| < |-31|$ **(iii)** $-18 > -19$ **(iv)** $|69| > |-69|$

Ⓐ (i) and (ii) Ⓑ (i) and (iii) Ⓒ (ii) and (iii) Ⓓ (ii) and (iv)

5. What is the value of $\frac{1}{2} \div \frac{1}{4}$?

Ⓐ $\frac{1}{8}$ Ⓑ $\frac{3}{4}$ Ⓒ 2 Ⓓ 8

6. The ratio of the number of red buttons to the number of yellow buttons in a box is 3 : 4. If there are 36 yellow buttons, how many red buttons are there?

Ⓐ 12 Ⓑ 27 Ⓒ 32 Ⓓ 36

7. A typist can type 3 pages in 20 minutes. How many pages can he type in an hour?

Ⓐ 9 Ⓑ 12 Ⓒ 15 Ⓓ 18

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8. Nina had 56 inches of ribbon. She used 42 inches to make some decorations. What percent of the ribbon did Nina use to make the decorations?

Ⓐ 14% Ⓑ 25% Ⓒ 42% Ⓓ 75%

9. Carlos budgeted $2,000 to spend on a vacation. If he spent $150 each day, which expression represents how much money Carlos had left after x days?

Ⓐ $1{,}850x$ dollars
Ⓑ $(2{,}000 - 150x)$ dollars
Ⓒ $150x$ dollars
Ⓓ $(2{,}000 + 150x)$ dollars

10. What is the value of the expression $3(x + 2) - \frac{4x}{5}$ when $x = 10$?

Ⓐ 8 Ⓑ 12 Ⓒ 24 Ⓓ 28

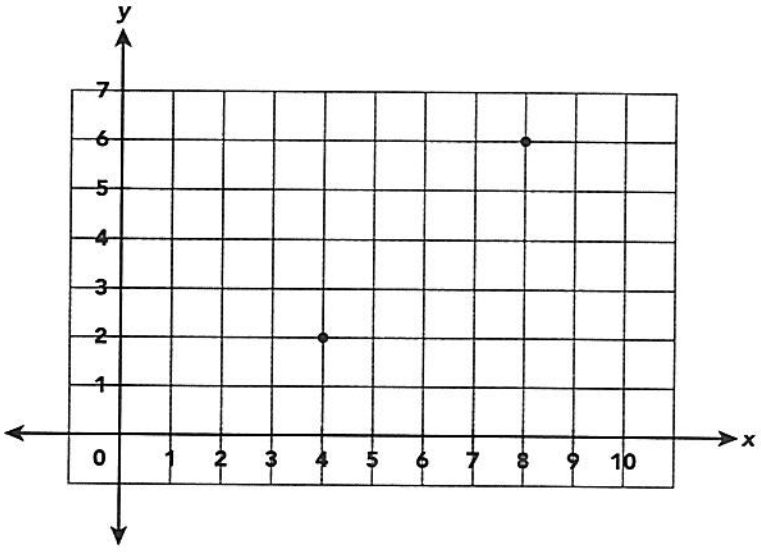
11. Simplify $2(5 + w) + 3(w + 2)$.

Ⓐ $2w + 12$ Ⓑ $2w + 16$ Ⓒ $5w + 16$ Ⓓ $16w$

12. What is the solution of the equation $\frac{4}{7}p = 56$?

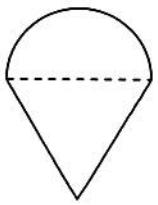
Ⓐ 8 Ⓑ 14 Ⓒ 32 Ⓓ 98

13. Samuel plots two points on the coordinate plane below. He wants to plot two more points and then connect all four points to form a square. Which two points should Samuel plot to form a square?



Ⓐ (4, 2) and (8, 6)
Ⓑ (4, 6) and (6, 6)
Ⓒ (4, 2) and (6, 2)
Ⓓ (4, 6) and (8, 2)

14. The figure is made up of a semicircle of radius 10.5 inches and an equilateral triangle. Find the perimeter of the figure. Use $\frac{22}{7}$ as an approximation for π.



Ⓐ 54 in.
Ⓑ 75 in.
Ⓒ 96 in.
Ⓓ 108 in.

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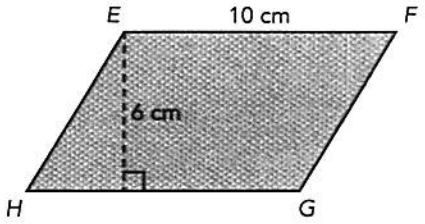
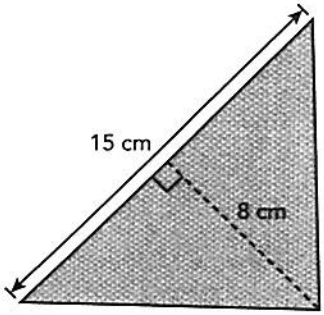
15. Parallelogram *EFGH* has the dimensions shown below.

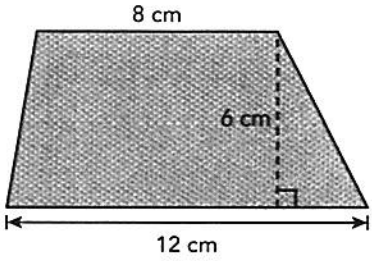


Which of the following figures **do not** have the same area as parallelogram *EFGH*?

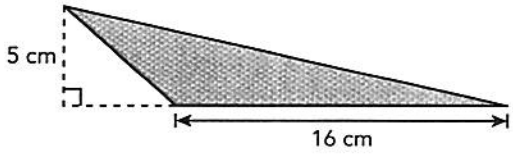
(A)



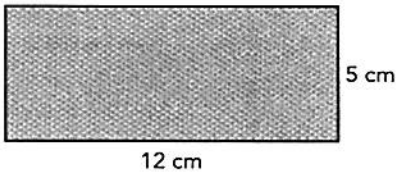
(B)



(C)



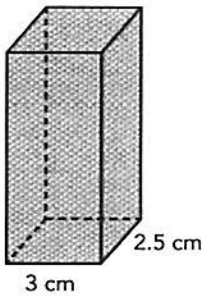
(D)



16. Max set the sprinkler system in a yard so that each pop-up sprinkler head would water a circular area with a radius of 14 feet. What area of the lawn will one sprinkler head cover? Use $\frac{22}{7}$ as an approximation for π.

(A) 88 ft² (B) 176 ft² (C) 616 ft² (D) 2,464 ft²

17. The volume of the rectangular solid shown is 52.5 cubic centimeters. What is its height?



(A) 7 cm
(B) 21 cm
(C) 45 cm
(D) 47 cm

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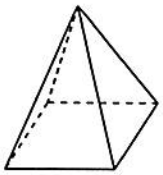
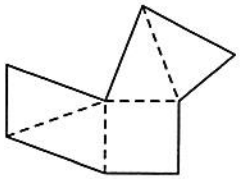
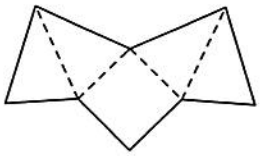
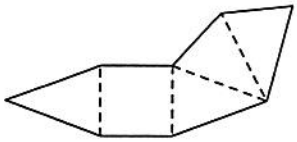
18. Bob folded a net to make the solid shown below.

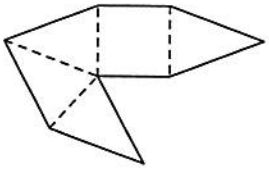


Which of the following nets could represent the net Bob folded?

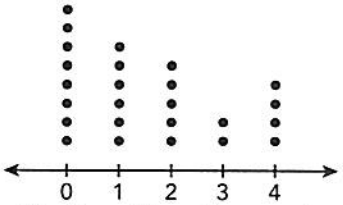
(A) 

(B) 

(C) 

(D) 

19. The dot plot shows the number of free homework passes received by students in a class. Each dot represents 1 student.



What percent of the students in the class did not receive a free homework pass?

(A) 8% (B) 16% (C) 32% (D) 68%

20. The number of e-mails received daily at a business for two weeks are shown below.

19, 28, 16, 10, 18, 22, 15, 15, 11, 26

What are the mean and median number of e-mails received in the two weeks?

(A) mean = 15 e-mails, median = 17 e-mails

(B) mean = 15 e-mails, median = 20 e-mails

(C) mean = 18 e-mails, median = 17 e-mails

(D) mean = 18 e-mails, median = 20 e-mails

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Short Answer and/or Constructed Response

(Questions 21 to 35: 15 × 2 points = 30 points, Questions 36 to 40: 5 × 4 points = 20 points, Questions 41 and 42: 2 × 5 points = 10 points)

Write your answer in the space given.

21. Draw a horizontal number line to represent a set of mixed numbers from 2 to 5, with an interval of $\frac{1}{4}$ between each pair of mixed numbers.

22. Write 150 as a product of its prime factors.

_____

23. Dexter mows his lawn every 12 days and washes his windows every 30 days. He mowed his lawn and washed his windows today. How many days from now will it be until he next mows his lawn and washes his windows on the same day?

_____

24. A box has a shipping limit of 30 pounds. If a factory wants to ship toys that weigh 0.75 pound each, how many toys can fit in a box?

_____

25. Write 56 : 72 in simplest form.

_____

26. Monica's group receives $6 for every dozen paper flowers they sell at a charity bazaar. At this rate, how many paper flowers must they sell if they want to raise $300?

_____

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27. If 25% of a number is 20, what is 60% of the number?

_____

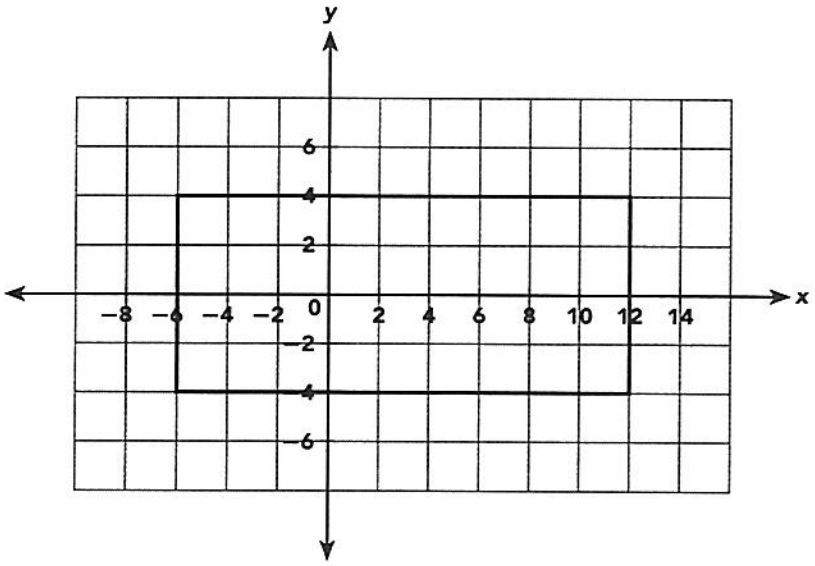
28. Janice has twice as many stickers as Melvin. Ryan has 5 more stickers than Janice. If Melvin has h stickers, how many stickers does Ryan have?

_____

29. The lake at which Maggie is fishing has a 36 fish limit. If she has already caught 7 fish, write an inequality for the number of fish, f, she can catch.

_____

30. The diagram shows the plan of a rectangular vegetable patch. The side length of each grid square is 2 meters. Find the perimeter of the vegetable patch.



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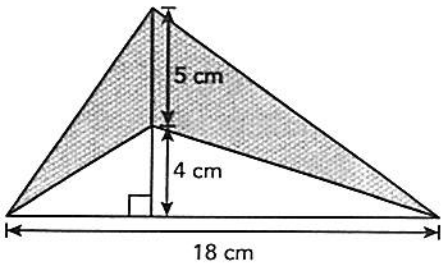
31. What is the area of the shaded part of the figure?



_____

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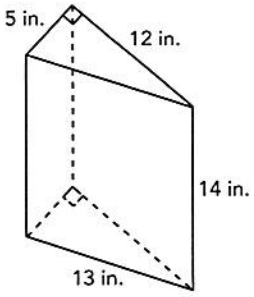
32. Shirley wants to find the distance her unicycle moves on the sidewalk when the tire makes one complete revolution. If the diameter of her unicycle tire is 14 inches, find the distance the unicycle moves in one complete revolution. Use $\frac{22}{7}$ as an approximation for π.

_____

33. The figure below shows a gift box in the shape of a triangular prism. Find the surface area, in square inches, of the gift box.



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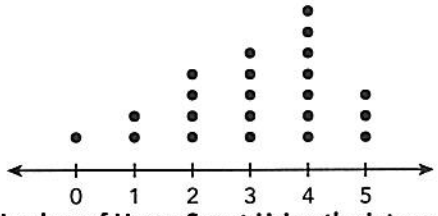
34. The dot plot shows the number of hours a group of children spent using the Internet during a certain weekend. Briefly describe the data distribution.



Number of Hours Spent Using the Internet

_____

_____

_____

_____

35. Nick's scores on 6 science tests are listed below.
87, 93, 82, 91, 93, 85
As a bonus, the science teacher is going to add 3 points to each test. How does the mean of the new test scores compare with the mean of the original test scores?

_____

_____

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Solve. Show your work.

36. An electrical cord was cut into three pieces in the ratio 5 : 3 : 7. The difference in length between the longest piece and the shortest piece is 64 centimeters.

a) Find the length of the longest piece.

b) Find the length of the electrical cord, in meters, before it was cut.

37. The number of visitors to an exhibition in the first week was 50,000. In the second week, there were 72,000 visitors.

a) Find the percent increase in the number of visitors from the first week to the second week.

b) The number of visitors in the third week was 12% more than in the second week. Calculate the number of visitors in the third week.

38. The distance between City A and City B is 340 miles.

a) Mike traveled on a bus from City A to City B. His journey took 5 hours. What was the average speed of the bus?

b) Ken left City B at 3:20 P.M., and drives a car at a speed of 80 miles per hour. What time did he reach City A?

Name: _____ Date: _____

End-of-Course Test B

100

Suggested Time: 90 min

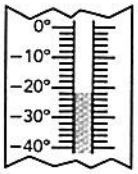
Multiple Choice (20 × 2 points = 40 points)

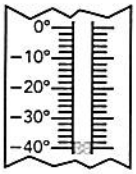
Fill in the circle next to the correct answer.

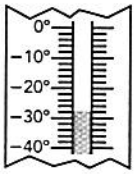
1. What is the least common multiple of 12 and 20?

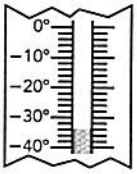
Ⓐ 2 Ⓑ 4 Ⓒ 60 Ⓓ 240

2. Michael recorded a temperature of −34°F when he hiked Mount McKinley. Then he descended the mountain. After 20 minutes, he recorded a temperature increase of 6°F. Which thermometer shows the temperature after 20 minutes descent down the mountain?

Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

3. Which of these statements are correct?

(i) $|-77| > |-71|$ **(ii)** $-28 < -33$

(iii) $|-3| < |-1|$ **(iv)** $-4 > -5$

Ⓐ (i) and (ii) Ⓑ (ii) and (iii) Ⓒ (iii) and (iv) Ⓓ (i) and (iv)

4. A baker has 24 pies that she wants to divide into eighths. How many slices of pie will she have?

Ⓐ 3 Ⓑ 16 Ⓒ 32 Ⓓ 192

5. What is the value of 9.8 ÷ 0.4?

Ⓐ 0.245 Ⓑ 2.45 Ⓒ 24.5 Ⓓ 245

6. The ratio of the number of boys to the number of girls in a class is 5 : 4. What is the ratio of the number of girls to the total number of students in the class?

Ⓐ 4 : 5 Ⓑ 4 : 9 Ⓒ 5 : 4 Ⓓ 5 : 9

7. Jim bought 12 gallons of gas at a gas station. If he paid $42 for the gas, find the cost of the gas per gallon.

Ⓐ $3.25 Ⓑ $3.50 Ⓒ $3.75 Ⓓ $3.85

8. Of the students in Ms. Andrews's class, 40% attended the study session for the next test. What fraction of her class attended the study session?

Ⓐ $\frac{1}{4}$ Ⓑ $\frac{2}{5}$ Ⓒ $\frac{2}{3}$ Ⓓ $\frac{4}{5}$

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9. The number of cars parked along Side Street is 3 less than 4 times the number of cars parked along West Street. If c cars are parked along West Street, which expression represents the number of cars parked along Side Street?

Ⓐ $7c$ Ⓑ $12c$ Ⓒ $3 - 4c$ Ⓓ $4c - 3$

10. Evaluate the expression $\frac{3y - 1}{4} + 2y$ when $y = 7$.

Ⓐ 12 Ⓑ 15 Ⓒ 19 Ⓓ 20

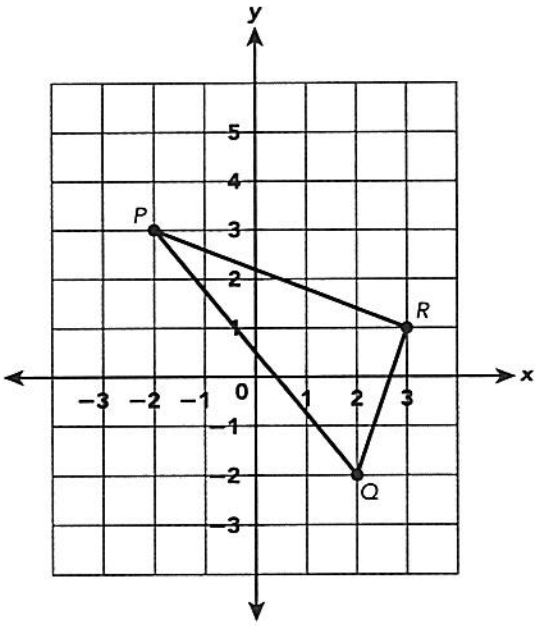
11. Simplify $3(n + 2m) + m$.

Ⓐ $3n + 2m$ Ⓑ $3n + 4m$ Ⓒ $3n + 6m$ Ⓓ $3n + 7m$

12. What is the solution of the inequality $\frac{3}{8}x > 9$?

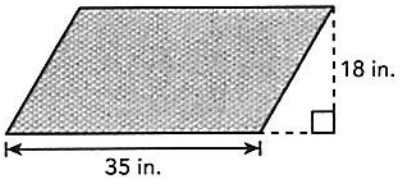
Ⓐ $x > 216$ Ⓑ $x > 72$ Ⓒ $x > 24$ Ⓓ $x > 14$

13. A triangle is plotted on the coordinate plane below.
Which of the following are the coordinates of point P, point Q, and point R?



Ⓐ $P(2, -3)$, $Q(2, -1)$, and $R(1, 3)$
Ⓑ $P(3, -2)$, $Q(-2, 1)$, and $R(1, 3)$
Ⓒ $P(-2, -3)$, $Q(1, 2)$, and $R(3, 1)$
Ⓓ $P(-2, 3)$, $Q(2, -2)$, and $R(3, 1)$

14. What is the area of the parallelogram?



Ⓐ 315 in.^{2}
Ⓑ 472.5 in.^{2}
Ⓒ 630 in.^{2}
Ⓓ 945 in.^{2}

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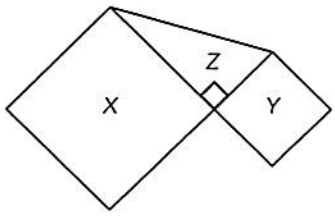
15. In the figure, X and Y are squares and Z is a right triangle. The area of Square X is 144 square inches and the area of Square Y is 81 square inches. What is the area of Triangle Z?

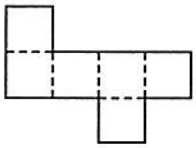


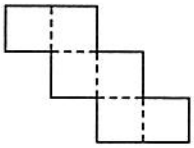
(A) 27 in.^{2} (B) 54 in.^{2} (C) 108 in.^{2} (D) 135 in.^{2}

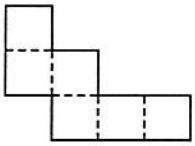
16. The circular wall clock in a school gym has a radius of 10 inches. What area of the wall space does the clock cover? Use 3.14 as an approximation for π.

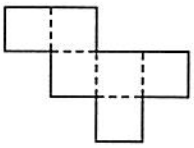
(A) 78.5 in.^{2} (B) 157 in.^{2} (C) 314 in.^{2} (D) 628 in.^{2}

17. Which of the following is **not** a net of a cube?

(A) 

(B) 

(C) 

(D) 

18. A triangular prism has a volume of 56 cubic feet. The triangular prism has a base area of 14 square feet. What is the height of the triangular prism?

(A) 2 feet (B) 4 feet (C) 8 feet (D) 16 feet

19. The points scored by a basketball team for the first 8 games of the season are shown below. What are the mean, and median score of the first 8 games?

82, 77, 93, 79, 83, 95, 81, 82

(A) mean = 82, median = 81

(B) mean = 82, median = 82

(C) mean = 84, median = 81

(D) mean = 84, median = 82

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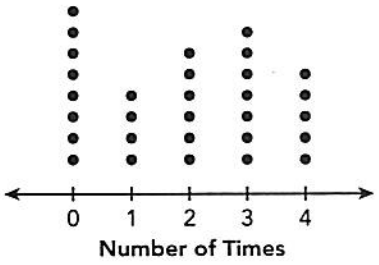
20. The dot plot shows the number of times students washed their family car in a month. Each dot represents 1 student.



What is the ratio of the number of students who did not wash their family car to the number of students who did wash their family car?

(A) 4 : 5 (B) 4 : 11 (C) 4 : 15 (D) 11 : 15

Short Answer and/or Constructed Response

(Questions 21 to 35: 15 × 2 points = 30 points, Questions 36 to 40: 5 × 4 points = 20 points, Questions 41 and 42: 2 × 5 points = 10 points)

Write your answer in the space given.

21. Draw a horizontal number line to represent a set of decimals between 6.3 and 9.9, with an interval of 0.6 between each pair of decimals.

22. Write 280 as a product of its prime factors.

_____

23. Marie wants to divide 36 files, 42 pens, and 126 pencils into boxes so that each box has the same number of each type of items, and there are no items left over. What is the greatest number of boxes Marie can fill?

_____

24. Marcus had $13\frac{1}{2}$ feet of wire. He cut the wire into several pieces, each measuring $\frac{3}{4}$ foot. How many pieces of wire did Marcus cut?

_____

Name: _____ Date: _____

25. Find the missing term in the following equivalent ratio.
$6 : 15 = 8 : \_\_\_\_$

_____

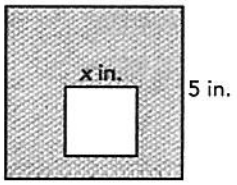
26. A grocer sells 6 pounds of rice for \$10.50. At this rate, what is the selling price of 40 pounds of rice?

_____

27. The original price of a bicycle is \$160. If the price is marked down by 15%, what is the new price of the bicycle?

_____

28. A square with a side length of x inches is inside a square with a side length of 5 inches, as shown. Write an expression that represents the area of the shaded region in terms of x.



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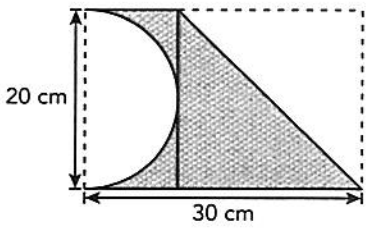
29. Susan took 2 hours to write 30 party invitations. Write an equation to represent the number of minutes, m, Susan spent writing x invitations.

_____

30. Jaden cut out the following shaded figure from a 20 centimeters by 30 centimeters rectangular piece of cardboard. What was the area that was cut out? Use 3.14 as an approximation for π.



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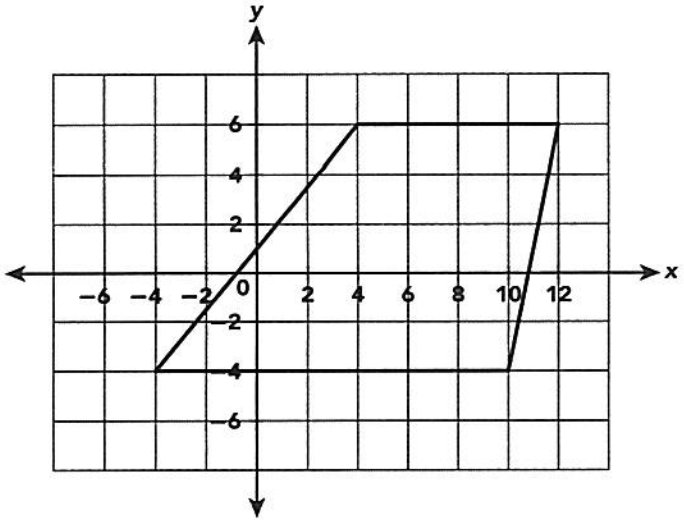
31. The diagram shows the plan of a playground. The side length of each grid square is 2 meters. Find the area of the playground.



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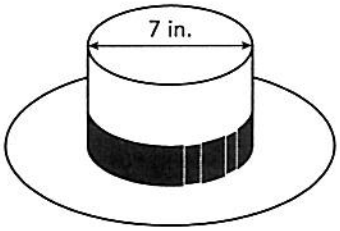
32. The top part of this hat is shaped like a cylinder with a diameter of 7 inches.

Find the length of the band that goes around the outside of the hat.

Use $\frac{22}{7}$ as an approximation for π.



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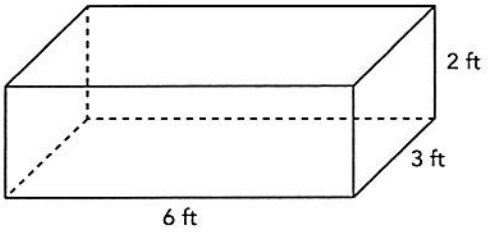
33. A company uses large crates to ship goods. One crate is shown below. Find the surface area, in square feet, of the crate.



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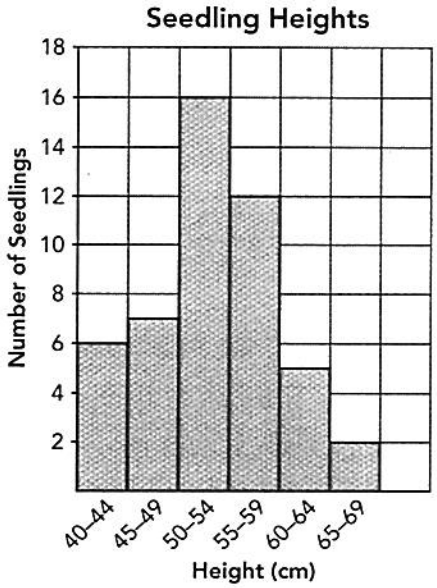
Name: _____ Date: _____

34. The histogram shows the heights of 50 seedlings. Briefly describe the distribution of the data.



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35. Paul has bowled 6 games today. His scores are listed below.
158, 124, 110, 146, 167, 165
Paul will bowl one more game. What is the minimum score Paul must achieve in the next game so that his mean score for all 7 games is at least 150?

_____

Solve. Show your work.

36. In a class, 60% of the students are boys and the rest are girls. Of the boys in the class, 40% of them wear glasses.

a) Write the ratio of the number of boys to the number of girls in the class in simplest form.

b) If 6 boys in the class wear glasses, find the number of students in the class.

Name: _____ Date: _____

37. Sam cycled 30 kilometers from Town A to Town B in $1\frac{1}{2}$ hours. He then cycled for another 2 hours at an average speed of 16.5 kilometers per hour to reach Town C.

a) What was the total distance Sam cycled?

b) Find his average speed for the whole journey.

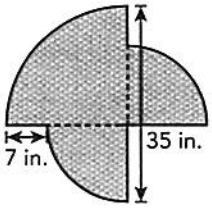
38. A ruler cost m cents and a pen cost 25 cents more than a ruler. Amy paid \$6.35 for 12 rulers and a certain number of pens.

a) How much did Amy pay for the pens in cents? Give your answer in terms of m.

b) If $m = 30$, find the number of pens Amy bought.

39. The figure below is made up of two identical quadrants and another larger quadrant. Use $\frac{22}{7}$ as an approximation for π.

a) Find the perimeter of the figure.



b) Find the area of the figure.

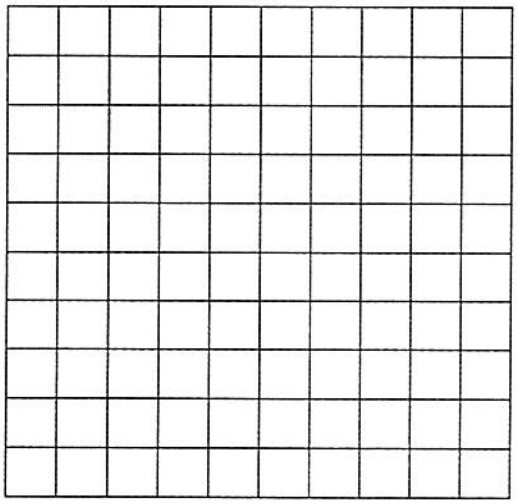
Name: _____ Date: _____

40. Jonathan works as a sales person and is paid a flat rate of \$40 per day. His additional earnings depend on the number of items he sells. His daily wage, \$$w$, is given by the equation $w = 40 + 0.5n$, where n is the number of items he sells.

Number of Items (n)	0	20	40	60	80
Daily Wage (\$$w$)	40	A	60	70	80

a) What is the value of A?

b) Graph the relationship between n and w. Use 1 unit on a horizontal axis to represent 20 items and 1 unit on a vertical axis to represent \$10.



c) If Jonathan wants to earn at least \$75 a day, what is the minimum number of items he needs to sell a day?

Name: _____ Date: _____

41. The table below shows the number of dogs sold by 20 pet shops in a month.

Number of Dogs Sold	Number of Pet Shops
1	1
2	3
3	5
4	x
5	2
6	3

a) Find the value of x.

b) Draw a dot plot to represent the data.

c) Find the total number of dogs sold by the 20 pet shops.