

Key



Grade 8  
Common Mathematics Assessment  
June 14, 2013  
Section A: No Calculator Permitted

Name: \_\_\_\_\_  
Mathematics Teacher: \_\_\_\_\_  
Homeroom: \_\_\_\_\_

**IMPORTANT**

You will need to complete your name and school information in three places:

- 1. Section A
- 2. Section B
- 3. Answer Sheet

**Section A: No Calculator Permitted**

12 Selected Response 12 points  
5 Constructed Response 11 points  
Total 23 points

**Section B: Calculator Permitted**

28 Selected Response 28 points  
9 Constructed Response 29 points  
Total 57 points

**FINAL** 80 Points

**Selected Response: No Calculator Permitted.**

For items 1 - 12, circle the appropriate response on the answer sheet.

1. What is the square of 9?

- (A) 3
- (B) 4.5
- (C) 18
- (D) 81

2. Which number is represented on the number line below?



- (A)  $\sqrt{3}$
- (B)  $\sqrt{6}$
- (C)  $\sqrt{9}$
- (D)  $\sqrt{12}$

3. What is the best approximation of  $\sqrt{20}$  ?

- (A) 4.5
- (B) 5.5
- (C) 10
- (D) 40

4. Brad lost 4 points in each hand of cards he played. If he played 3 hands, which statement represents his final score at the end of the game?

- (A)  $(+3) \times (-4)$
- (B)  $(+3) + (-4)$
- (C)  $(+3) \times (+4)$
- (D)  $(+3) + (+4)$

5. Which product will have a negative value?

- (A)  $(-4) \times (-2) \times (+3)$
- (B)  $(+4) \times (+2) \times (+3)$
- (C)  $(-4) \times (+2) \times (+3)$
- (D)  $(+4) \times (-2) \times (-3)$

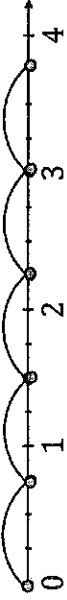
6. Complete the division statement:  $(?) \div (-2) = (+5)$

- (A) -10
- (B) -7
- (C) +7
- (D) +10

7. Which operation must be performed first?  $(+4) \times [(-1) - (+7) + (-6)] \div (+2)$

- (A)  $(+4) \times (-1)$
- (B)  $(-1) - (+7)$
- (C)  $(+7) + (-6)$
- (D)  $(-6) \div (+2)$

8. Which multiplication sentence is modelled?



(A)  $3 \times \frac{4}{5} = 3\frac{4}{5}$

(B)  $5 \times \frac{4}{5} = 3\frac{4}{5}$

(C)  $5 \times \frac{3}{4} = 3\frac{3}{4}$

(D)  $3 \times \frac{3}{4} = 3\frac{3}{4}$

9. Which product is closest to 0?

(A)  $\frac{1}{2} \times \frac{1}{3}$

(B)  $\frac{1}{2} \times \frac{1}{4}$

(C)  $\frac{1}{2} \times \frac{1}{5}$

(D)  $\frac{1}{2} \times \frac{1}{6}$

10. What is the product of  $2\frac{1}{2} \times \frac{6}{7}$ ?

(A)  $2\frac{1}{2}$

(B)  $2\frac{1}{7}$

(C)  $2\frac{3}{7}$

(D)  $2\frac{11}{12}$

$2\frac{1}{2} \times \frac{6}{7} = \frac{15}{7} = 2\frac{1}{7}$

11. Calculate:  $16 \div \frac{1}{2}$

(A) 4

(B) 8

(C) 16

(D) 32

12. Which expression is **not** equivalent to  $\frac{6}{7} \div \frac{1}{2}$ ?

(A)  $\frac{6}{7} \times \frac{1}{2}$

(B)  $\frac{6}{7} \times \frac{2}{1}$

(C)  $\frac{12}{14} \div 2$

(D)  $\frac{12}{14} \div \frac{7}{14}$

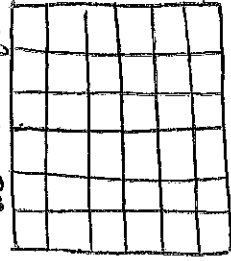
**Constructed Response: No Calculator Permitted.**

Answers to be written on this paper in the space provided. Show all workings.

[2 points]

13. Is 36 a perfect square? Support your answer using a strategy of your choice.

① 36 tiles can be arranged as a square.



OR 36 = 2 x 2 x 3 x 3 ①

even number of each prime factor

OR 36 = 6 x 6 ①

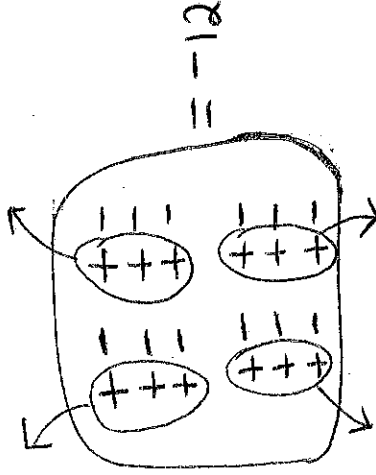
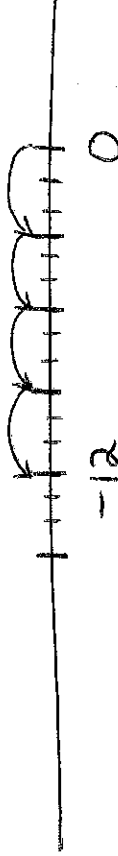
A perfect square can be written as a number x itself.

1, 2, 3, 4, 6, 9, 12, 18, 36 ①  
odd number of factors, ∴ 6 x 6 = 36.

14. Use a model, such as integer counters or a number line, to calculate:

[2 points]

$(-4) \times (+3)$



[2 points]

15. A student said the answer to this skill testing question was  $(-1)$ . His solution is as follows:

$$\begin{aligned} & (-4) \times (+2) + (+6) \div (+2) \\ & = (-8) + (+6) \div (+2) \\ & = (-2) \div (+2) \\ & = (-1) \end{aligned}$$

Explain where he made his mistake and give the correct solution.

He performed addition as the second step when ① he should have completed the division, so the order of operations was not correct.

Correct Solution:  $(-4) \times (+2) + (+6) \div (+2)$  ①

$$\begin{aligned} & = (-8) + (+6) \div (+2) \\ & = (-8) + (+3) \\ & = (-5) \end{aligned}$$

Grade 8 Common Mathematics Assessment  
Section A

16. There were 12 people at a party. Each person ate  $\frac{3}{8}$  of a pizza.  
How many pizzas were eaten?

[2 points]

$$\begin{aligned} & 12 \times \frac{3}{8} \quad \left(\frac{1}{2}\right) \\ & = \frac{12}{1} \times \frac{3}{8} \quad \left(\frac{1}{2}\right) \\ & = \frac{9}{2} \quad \left(\frac{1}{2}\right) \\ & = 4\frac{1}{2} \quad \left(\frac{1}{2}\right) \end{aligned}$$

*4 1/2 pizzas were eaten.*

17. Calculate:  $\frac{1}{2} + \frac{2}{3} \div \frac{5}{6}$

[3 points]

$$\begin{aligned} & \frac{1}{2} + \frac{2}{3} \times \frac{6}{5} \quad \left(\frac{1}{2}\right) \\ & = \frac{1}{2} + \frac{4}{5} \quad \left(\frac{1}{2}\right) \\ & = \frac{5}{10} + \frac{8}{10} \quad \left(\frac{1}{2}\right) \\ & = \frac{13}{10} \quad \left(\frac{1}{2}\right) \\ & = 1\frac{3}{10} \quad \left(\frac{1}{2}\right) \end{aligned}$$

\*\*\*\*\*

End of Section A.  
Please raise your hand and your teacher will collect Section A.  
You can now begin Section B.



**Grade 8  
Common Mathematics Assessment**

**June 14, 2013**

**Section B: Calculator Permitted**

Name:

Mathematics

Teacher:

Homeroom:

**Section A: No Calculator Permitted**

12 Multiple Choice

12 points

5 Constructed Response

11 points

Total

23 points

**Section B: Calculator Permitted**

28 Multiple Choice

28 points

9 Constructed Response

29 points

Total

57 points

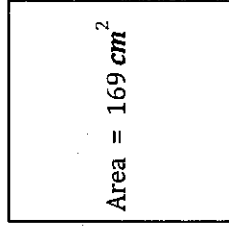
**FINAL**

**80 POINTS**

**Selected Response: Calculator Permitted.**

For items 18 – 45, circle the appropriate response on the answer sheet.

18. What is the side length of the square below?

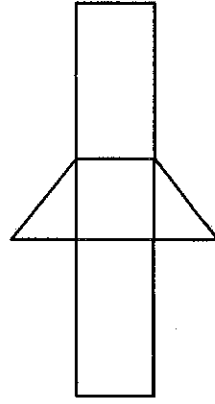


- (A) 13 cm
- (B) 42.25 cm
- (C) 52 cm
- (D) 84.5 cm

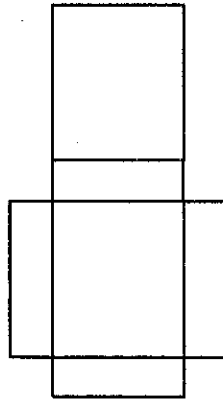
19. Which set of numbers is a Pythagorean triple?

- (A) 2 - 4 - 6
- (B) 4 - 8 - 12
- (C) 5 - 7 - 9
- (D) 6 - 8 - 10

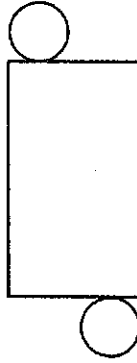
20. Which net will produce a rectangular prism?



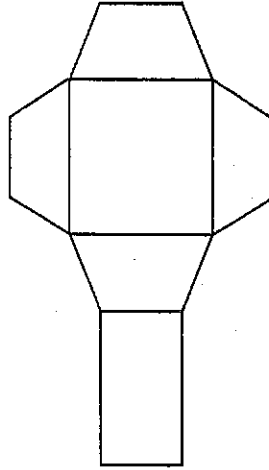
(A)



(B)

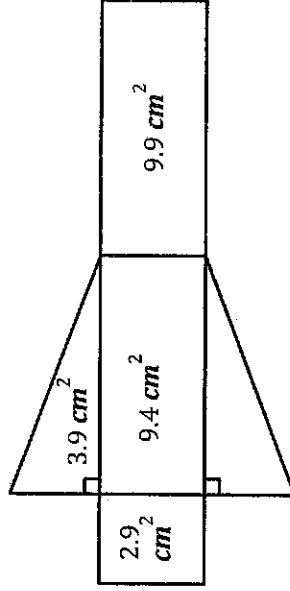


(C)



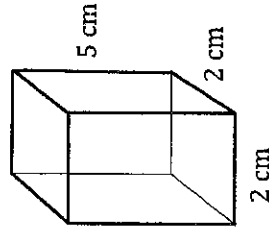
(D)

21. What is the surface area of the prism represented by the net below?



- (A)  $26.1 \text{ cm}^2$
- (B)  $30.0 \text{ cm}^2$
- (C)  $1052.5 \text{ cm}^2$
- (D)  $4104.8 \text{ cm}^2$

22. What is the surface area of the prism shown?



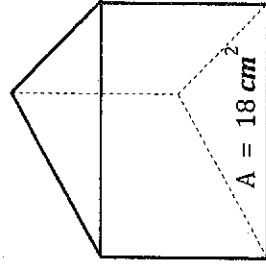
$$2(2 \cdot 2) + (2 \cdot 5) \\ 8 + 40$$

- (A)  $9 \text{ cm}^2$
- (B)  $20 \text{ cm}^2$
- (C)  $36 \text{ cm}^2$
- (D)  $48 \text{ cm}^2$

23. The surface area of a cube is  $54 \text{ cm}^2$ . What is the area of one face?

- (A)  $3 \text{ cm}^2$
- (B)  $6 \text{ cm}^2$
- (C)  $9 \text{ cm}^2$
- (D)  $27 \text{ cm}^2$

24. Calculate the height of the triangular prism if its volume is  $162 \text{ cm}^3$  and base area is  $18 \text{ cm}^2$ .

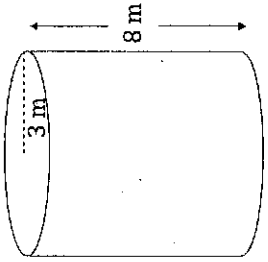


$$V = B \times h \\ \frac{162}{18} = \frac{18 \times h}{18} \\ 9 = h$$

- (A)  $9 \text{ cm}$
- (B)  $144 \text{ cm}$
- (C)  $180 \text{ cm}$
- (D)  $2916 \text{ cm}$



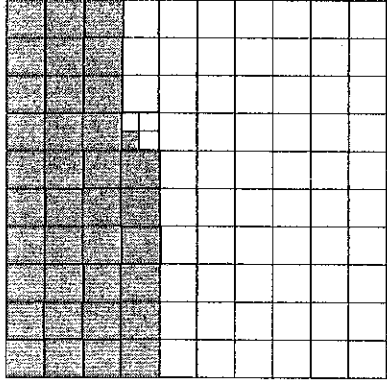
25. What is the volume of the cylinder to the nearest  $m^3$ ?



$$\begin{aligned} V &= B \times h \\ &= \pi \cdot r^2 \cdot h \\ &= \pi \cdot 3^2 \cdot 8 \\ &= \end{aligned}$$

- (A)  $38 m^3$
- (B)  $75 m^3$
- (C)  $151 m^3$
- (D)  $226 m^3$

26. What percent of the following grid is shaded?



- (A)  $36.25\%$
- (B)  $36.75\%$
- (C)  $63.25\%$
- (D)  $63.75\%$

27. What is 225% as a decimal?

- (A) 0.00225
- (B) 0.225
- (C) 2.25
- (D) 22500

28. Which fraction is equal to 0.17%?

- (A)  $\frac{17}{10}$
  - (B)  $\frac{17}{100}$
  - (C)  $\frac{17}{1000}$
  - (D)  $\frac{17}{10000}$
- $$\frac{0.17}{100} = \frac{17}{10000}$$

Grade 8 Common Mathematics Assessment  
Section B



29. Over a ten year period the price of gas increased from \$0.60 to \$1.20. What is the percent increase?

- (A) 50%  
(B) 60%  
(C) 100%  
(D) 200%

30. The regular price of a t-shirt is \$20.00. It is discounted by 30%. What is the sale price?

- (A) \$17.00  
(B) \$14.00  
(C) \$6.00  
(D) \$3.00

$70\% \times 20$

31. What is the ratio of  to  to total shapes below?

$6 : 4 : 13$

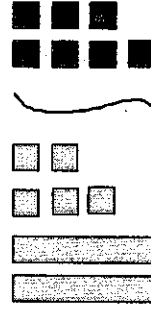


- (A) 3:4:6  
(B) 3:13:4  
(C) 6:4:13  
(D) 6:4:3

32. In a class, there are 7 girls for every 5 boys. If there are 24 students in the class, how many are boys?



- (A) 5  
(B) 10  
(C) 12  
(D) 14
- $G : B$   
 $7 : 5$   
B: Total  
 $5 : 12 = x : 24$

33. Solve:  $5 + 2x = -7$



- (A)  $x = -6$   
(B)  $x = -1$   
(C)  $x = 1$   
(D)  $x = 6$

$5 + 2x = -7$   
 $2x = -7 - 5$   
 $2x = -12$   
 $x = -6$

Note:  = positive  = negative

34. What is the value of  $x$  if  $\frac{x}{3} - 2 = -5$ ?

- (A) -9  
(B) -3  
(C) +3  
(D) +9

$\frac{x}{3} = -5 + 2$   
 $\frac{x}{3} = -3$   
 $x = -9$

35. Expand:  $3(x - 5)$

- (A)  $x - 2$   
 (B)  $x - 15$   
 (C)  $3x - 5$   
 (D)  $3x - 15$

$3x - 15$

36. What is the missing value in the table?

X	Y
-2	-7
-1	-4
0	-1
1	2
2	5

$\begin{matrix} > +3 \\ > +3 \\ > +3 \end{matrix}$

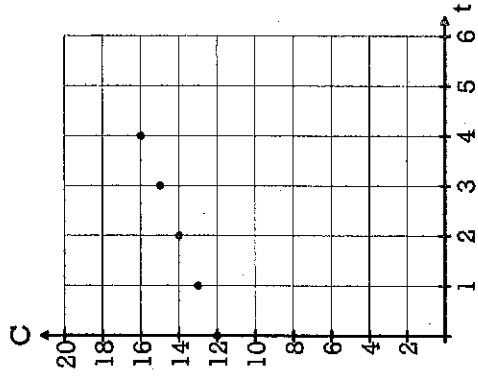
- (A) 1  
 (B) 2  
 (C) 3  
 (D) 4

37. Marc receives \$10.00 per week as allowance and an extra \$2.00 per chore ( $c$ ). Which represents the total amount of money ( $t$ ) that Marc receives each week?

- (A)  $c = 2t + 10$   
 (B)  $c = 10t + 2$   
 (C)  $t = 2c + 10$   
 (D)  $t = 10c + 2$

$t = 10 + 2c$

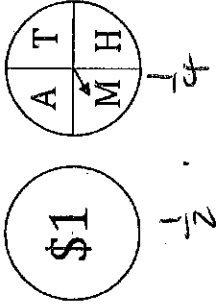
38. Describe the relation between the total cost of a pizza ( $C$ ) and the number of toppings ( $t$ ).



- (A) As the number of toppings increases by 1, the total cost decreases by 2.  
 (B) As the number of toppings increases by 1, the total cost decreases by 1.  
 (C) As the number of toppings increases by 1, the total cost increases by 2.  
 (D) As the number of toppings increases by 1, the total cost increases by 1.

Grade 8 Common Mathematics Assessment  
Section B

39. What is the probability of getting heads when you flip a \$1 coin and landing on M with the spinner below?

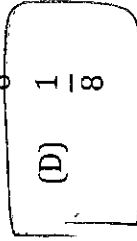


(A)  $\frac{1}{2}$

(B)  $\frac{1}{4}$

(C)  $\frac{1}{6}$

(D)  $\frac{1}{8}$



40. On Pi Day students have a choice of one food item and one drink from the list below. What is the probability, to the nearest percent, that a student will order a bagel and milk?

FOOD	DRINK
Pizza	Milk
Bagel	Juice
Hamburger	Water
Cheeseburger	

$\frac{1}{4}$

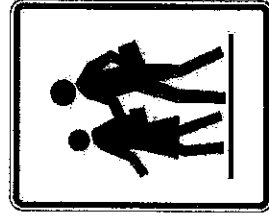
$= \frac{1}{4} \times \frac{1}{3} = \frac{1}{12} \approx 0.08$

- (A) 8%  
(B) 12%  
(C) 25%  
(D) 33%

41. What type of graph shows change over time?

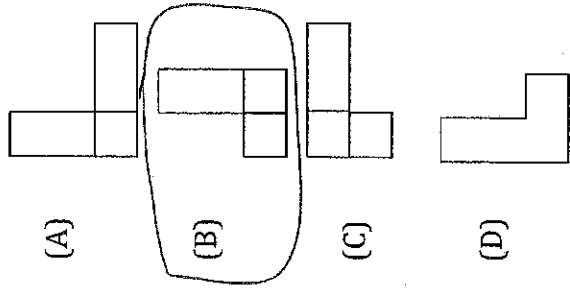
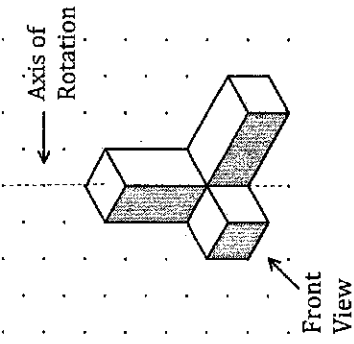
- (A) Bar graph  
(B) Circle graph  
(C) Line graph  
(D) Pictograph

42. Which view is represented by the people in this sign?

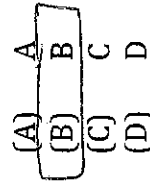
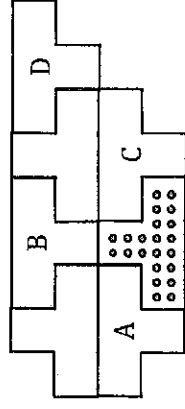


- (A) Front  
(B) Back  
(C) Side  
(D) Top

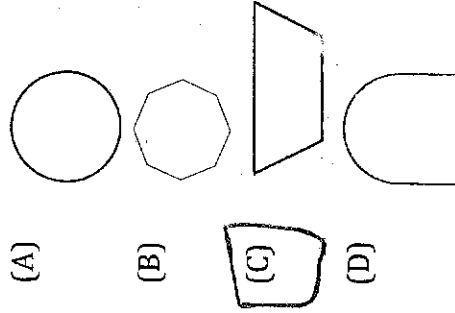
43. What is the front view after this object is rotated 90° clockwise about the axis shown?



44. In the tessellation below which shape is a reflection of the shaded shape?



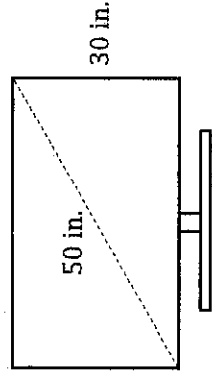
45. Which shape will tessellate?



**Constructed Response: Calculator Permitted.**

Answers to be written on this paper in the space provided. Show all workings.

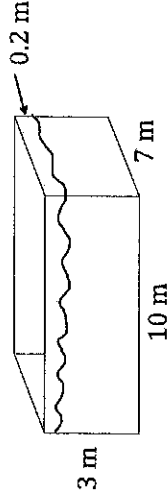
46. The size of a TV screen is described by the length of its diagonal. If the 50-inch flat screen TV shown below has a width of 30 inches, what is the length? [3 points]



$$\begin{aligned}
 30^2 + x^2 &= 50^2 \\
 900 + x^2 &= 2500 \\
 x^2 &= 2500 - 900 \\
 x^2 &= 1600 \\
 x &= \sqrt{1600} \\
 x &= 40
 \end{aligned}$$

The length of the TV is 40 in. each.  $\left(\frac{1}{2}\right)$

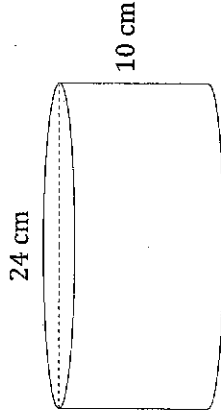
47. The rectangular community swimming pool is 10m by 7m by 3m and it must be filled so that the surface of the water is 0.2 m lower than the ledge of the pool. If one truck load of water holds  $50 \text{ m}^3$  of water, how many truck loads will need to be delivered to fill the pool? [4 points]



$$\begin{aligned}
 V &= A_{\text{Base}} \times h \left(\frac{1}{2}\right) \\
 &= 10 \times 7 \times 2.8 \left(\frac{1}{2}\right) * \\
 &= 196 \left(\frac{1}{2}\right)
 \end{aligned}$$

There must be 4 truck loads of water delivered.  $\left(\frac{1}{2}\right)$

48. Andrea's cake has a diameter of 24 cm and a height of 10 cm. Calculate how many  $\text{cm}^2$  of chocolate icing, to the nearest tenth, she needs to cover the sides and top of the cake. [3 points]



$$\begin{aligned}
 SA &= \pi r^2 + 2\pi r h \left(\frac{1}{2}\right) \\
 &= \pi (12)^2 + 2\pi (12)(10) \left(\frac{1}{2}\right) \\
 &= 452.16 + 753.6 \left(\frac{1}{2}\right) \\
 &= 1205.76 \\
 &= \underline{\underline{1206.4}} \left(\frac{1}{2}\right)
 \end{aligned}$$

Andrea needs  $1205.8 \text{ cm}^2$  of icing.

Grade 8 Common Mathematics Assessment  
Section B

49. Peter has \$380 in the bank. He wants to purchase an iPad mini that costs \$349.99 before taxes. Does he have enough money? **Note:** HST is 13% [3 points]

If so, how much will he have left over? If not, how much extra money does he need?

$$\begin{aligned} \$349.99 \times 0.13 &= \$45.50 \quad \textcircled{1} \\ \$349.99 + 45.50 &= \$395.49 \quad \textcircled{1} \end{aligned}$$

He does not have enough.

$$395.49 - 380.00 = \$15.49 \quad \textcircled{1}$$

He needs an extra \$15.49.

50. Which is the better buy? [3 points]

$$\frac{A}{3} = \frac{\$2.37}{3}$$

$$\frac{B}{4} = \frac{\$3.08}{4}$$

or

$$= \$0.79/\text{can} \quad \textcircled{1}$$

4 cans of soda for \$3.08 at Store B.

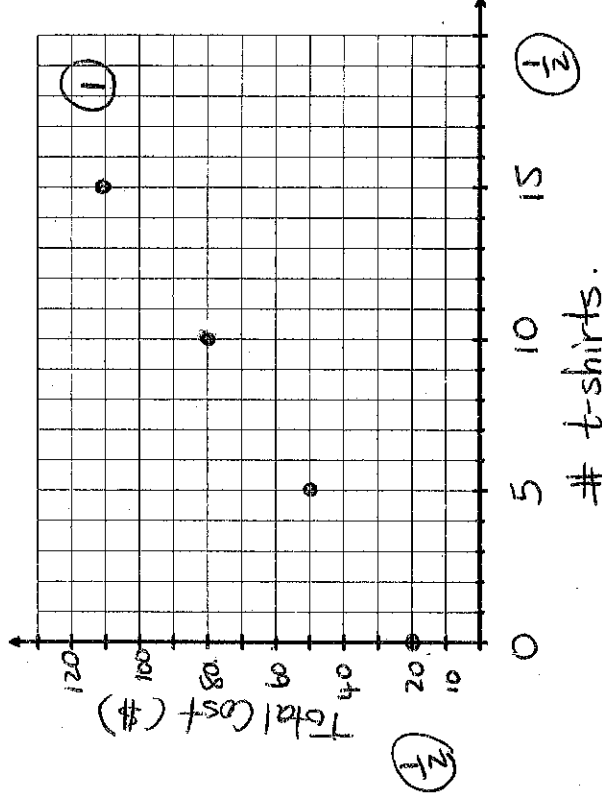
$$= \$0.77/\text{can} \quad \textcircled{1}$$

The better buy is at store B.  $\textcircled{1}$

51. Grade 8 students are ordering class t-shirts. The company charges a base rate of \$20 plus \$6 per t-shirt. An equation for this relation is  $C = 6t + 20$  where  $C$  is the total cost in dollars and  $t$  is the number of t-shirts. [4 points]

- a) Complete the table of values.  
b) Graph the relation. Label the axes.

t	C
0	20
5	50
10	80
15	110



Grade 8 Common Mathematics Assessment  
Section B

52. a) Solve algebraically:  $-2(x + 4) = -18$

[3 points]

$\frac{1}{2}$   $-2x - 8 = -18$

$\frac{1}{2}$   $-2x - 8 + 8 = -18 + 8$

$\frac{1}{2}$   $\frac{-2x}{-2} = \frac{-10}{-2}$

$\frac{1}{2}$   $x = 5$

b) Verify the solution.  $LS = -2(5 + 4)$   $\frac{1}{2}$

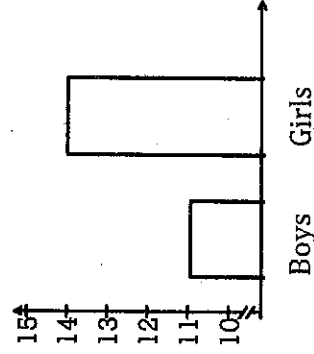
$= -2(9)$   $\frac{1}{2}$

$= -18 = RS.$

53. Explain how the data displayed in the graph is misleading.

[2 points]

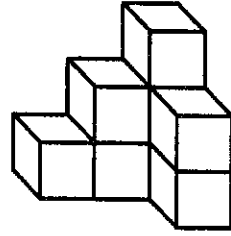
Students With "A" Grades



Since the vertical scale  $\textcircled{1}$  does not begin at zero, it gives a false impression  $\textcircled{1}$  that there are over twice as many girls with A grades as boys.

54. Draw and label the top, front, left and right views of the given object.

[4 points]



$\textcircled{T}$   $\textcircled{L}$   $\textcircled{R}$   $\textcircled{F}$  each  $\textcircled{1}$

\*\*\*\*\*

End of Grade 8 Common Mathematics Assessment.  
Have a safe and happy summer!



Grade 8 Common Mathematics Assessment June 2013  
Answer Sheet

Name: \_\_\_\_\_  
 Mathematics Teacher: \_\_\_\_\_  
 Homeroom: \_\_\_\_\_

Section A  
No Calculator Permitted

- 1. A B C (D)
- 2. A B (C) D
- 3. (A) B C D
- 4. (A) B C D
- 5. A B (C) D
- 6. (A) B C D
- 7. A B (B) C D
- 8. A B (C) D
- 9. A B C (D)
- 10. A B (B) C D
- 11. A B C (D)
- 12. (A) B C D

Section B  
Calculator Permitted

- 18. (A) B C D
- 19. A B C (D)
- 20. A (B) C D
- 21. A (B) C D
- 22. A B C (D)
- 23. A B (C) D
- 24. (A) B C D
- 25. A B C (D)
- 26. (A) B C D
- 27. A B (C) D
- 28. A B C (D)
- 29. A B (C) D
- 30. A (B) C D
- 31. A B (C) D
- 32. A (B) C D
- 33. (A) B C D
- 34. (A) B C D
- 35. A B C (D)
- 36. A (B) C D
- 37. A B (C) D
- 38. A B C (D)
- 39. A B C (D)
- 40. (A) B C D
- 41. A B (C) D
- 42. A B (C) D
- 43. A (B) C D
- 44. A (B) C D
- 45. A (C) D