

Academic



Grade 9 Assessment of Mathematics

Spring 2006



Education
Quality and
Accountability
Office

Please note: The format of these booklets is slightly different from that used for the assessment. The items themselves remain the same.

1. Asha receives \$10 000.

Asha keeps **half** his money and gives **the rest** to Bertha.



Bertha keeps **half** her money and gives **the rest** to Calvin.

Calvin keeps **half** his money and gives **the rest** to Dane.

Dane keeps **half** his money and gives **the rest** to Evanna.

Which expression shows the dollar amount of money that **Evanna** receives from Dane?

- a $10\ 000 \div 2^4$ *
- b $5000 \times \frac{1}{2} \times \frac{1}{2}$
- c $10\ 000 \div \frac{1}{2} \div \frac{1}{2} \div \frac{1}{2} \div \frac{1}{2}$
- d $2500 \div 2$

2. With \$12.00, Sam and a friend are buying lunch from the menu below.

<i>Menu</i>	
<u>Soups and Salads</u>	
Tomato Soup	\$1.95
Green Salad	\$2.25
<u>Sandwiches</u>	
Ham & Cheese	\$4.65
Turkey	\$5.15
Hamburger	\$3.45
<u>Beverages</u>	
Soft Drink	\$1.35
Tea/Coffee	\$0.99
Juice	\$1.75
	Tax included
	

Which of the following orders could they buy with their \$12.00?

- a two soft drinks and two turkey sandwiches
- b one tomato soup, one tea and two ham and cheese sandwiches
- c one tomato soup, one juice, two green salads and one hamburger *
- d one soft drink, one tea, one turkey sandwich and one ham and cheese sandwich

3. Sabeeta expands and simplifies the expression below.

$$2(3x^2 - 5x) + 4x(7 + x)$$

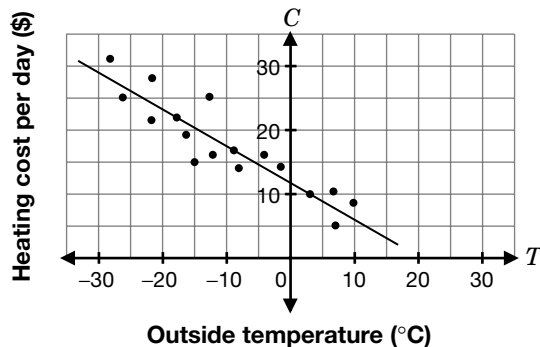


Which expression is equivalent to the one above?

- a $6x^2 + 22x$
 b $10x^2 + 18x$ *
 c $10x^2 - 38x$
 d $28x^2$
4. If $x = 3$, what is the value of $2x^2 + 5x$?
- a 21
 b 27
 c 33 *
 d 51

5. Duncan records the outside temperature at noon each day. He also records the heating cost per day. The graph shows a scatter plot and a line of best fit for his data.

Heating Cost per Day vs. Outside Temperature



By approximately how much does the heating cost per day **decrease** when the outside temperature increases **by 5°**?

- a \$1
 b \$3 *
 c \$5
 d \$7

6. The student council sells lollipops for 10¢ each. They pay 4¢ for each lollipop and spend \$10 to advertise the sale.



P represents the student council's profit, in dollars, and n represents the number of lollipops sold.

Which **equation** represents the profit?

- a $P = 0.06n - 10$ *
- b $P = 0.06n + 10$
- c $P = 10n + 0.06$
- d $P = 10 + 0.04n$

7. Soheila needs to calculate the first differences for the relations below. Which relation will she find is **linear**?

a

Time (in hours)	Distance (km)	First differences
3	10	
		?
4	100	
		?
5	1000	
		?
6	10000	

b

Time (in hours)	Distance (km)	First differences
1	25	
		?
2	30	
		?
3	35	
		?
4	45	

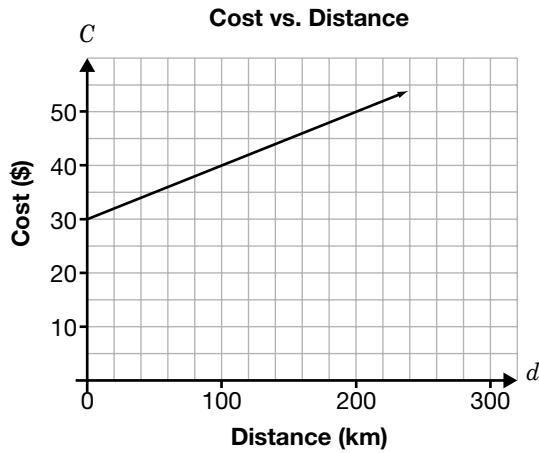
c

Time (in hours)	Distance (km)	First differences
3	20	
		?
5	30	
		?
7	40	
		?
9	60	

d

Time (in hours)	Distance (km)	First differences
10	60	
		?
8	55	
		?
6	50	
		?
4	45	

8. Which equation represents the line on the graph?



- a $C = 0.1d + 30$ *
- b $C = 0.4d + 30$
- c $C = d + 30$
- d $C = 10d + 30$

9. How many of these equations represent straight lines?

$$y = x - 2$$

$$y = 2 - 4x$$

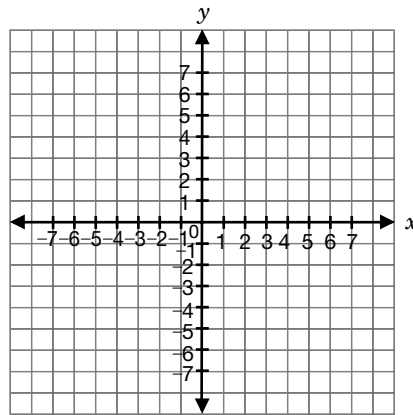
$$y = x^2 + 8$$

- a one
- b two *
- c three
- d none

10. Rearrange $4y - x = 8$ so that it is in the form $y = mx + b$.

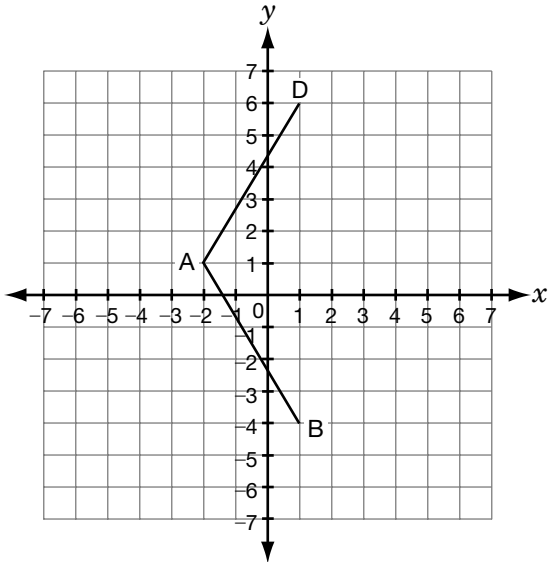
- a $y = x + 8$
- b $y = -x + 2$
- c $y = \frac{1}{4}x + 2$ *
- d $y = -\frac{1}{4}x + 2$

11. What are the coordinates of the point of intersection of the lines $y = -x + 1$ and $x = 3$?



- a (2, 3)
- b (3, 2)
- c (3, -2) *
- d (-2, 3)

12. A is the point $(-2, 1)$, B is the point $(1, -4)$ and D is the point $(1, 6)$.



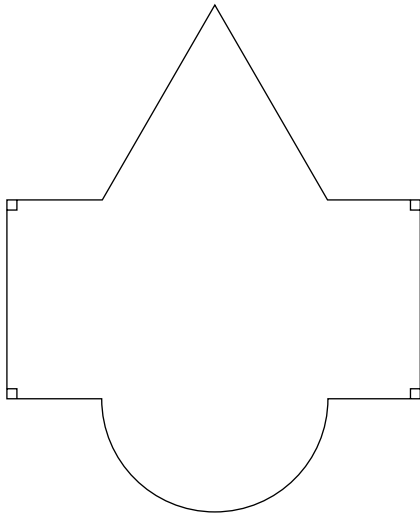
If ABCD is a rhombus, which of the following points is point C?

- a $(1, 1)$
- b $(1, 4)$
- c $(4, 1)$ *
- d $(4, 4)$

13. If the diameter of a volleyball is three times the diameter of a tennis ball, which statement below is true?

- a The volume of the volleyball is 3 times the volume of the tennis ball.
- b The volume of the volleyball is 9 times the volume of the tennis ball.
- c The surface area of the volleyball is 9 times the surface area of the tennis ball. *
- d The surface area of the volleyball is 27 times the surface area of the tennis ball.

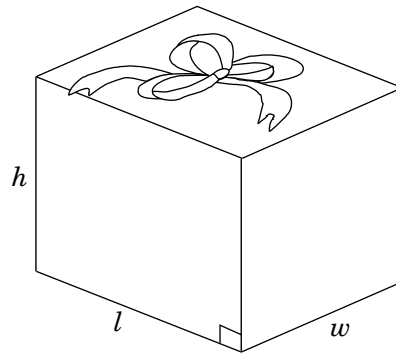
14. The floor plan of the lobby of a hotel is shown below.



Which of the following formulas is not useful to determine the area of part of the lobby?

- a $\frac{b \times h}{2}$
- b $\frac{\pi r^2}{2}$
- c $\frac{4}{3} \pi r^3$ *
- d $l \times w$

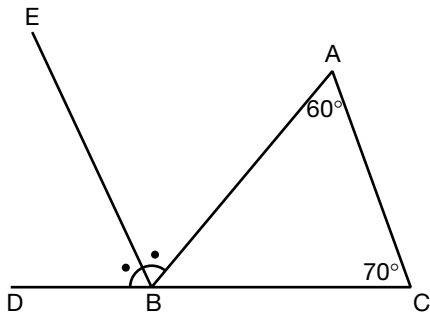
15. Hunaid is wrapping the gift shown below.



Which formula should he use to determine **the amount of wrapping paper** he needs to cover the box?

- a $V = lwh$
- b $A = lw$
- c $P = 2l + 2w$
- d $SA = 2(wh + lw + lh)$ *

16. In the diagram below, line segment EB bisects $\angle ABD$.



What is the measure of $\angle ABE$?

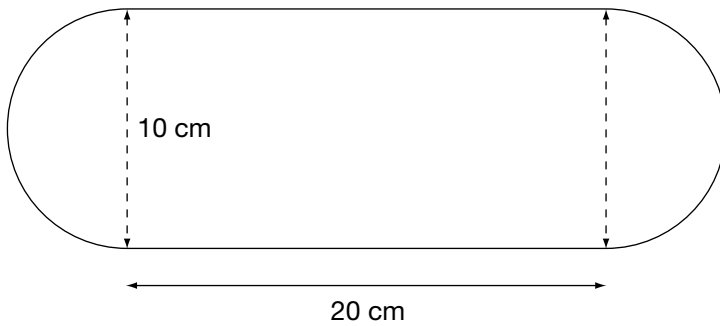
- a 60°
- b 65° *
- c 70°
- d 130°

1. Choc-o-Can

Sweet Shapes is a company that makes chocolate. Each year, the company produces a new can for its specialty chocolates. This year's can is illustrated below. The top of the can swings open for easy access.



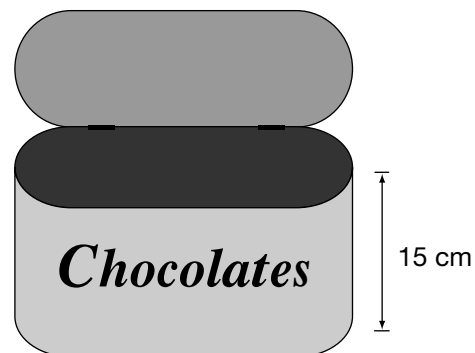
Derek makes a sketch of the bottom of the can and records the measurements below.



- a) Determine the area of the bottom of the can.
Show your work.

- b) The can contains individually wrapped chocolates that each take up about 28 cm^3 of space.

Determine how many chocolates a container of height 15 cm will hold.
Show your work.

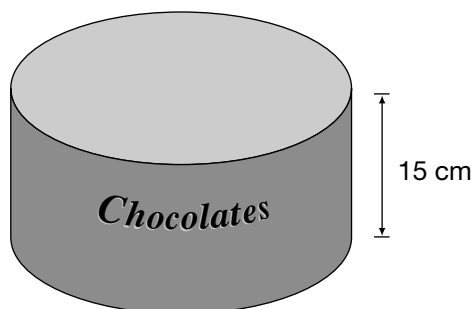


- c) Sweet Shapes wants to reduce the size of each chocolate by 15%. Determine the volume of 100 of the reduced chocolates.
Show your work.

Reminder:
The original chocolates each take up about 28 cm^3 of space.

- d) Next year, Sweet Shapes will produce a **cylindrical can** for the chocolates. The can will contain 75 wrapped chocolates, each with a volume of 19 cm^3 . This can will also have a **height of 15 cm**.

Determine the radius of this can.
Show your work.



2. Berries for Picking

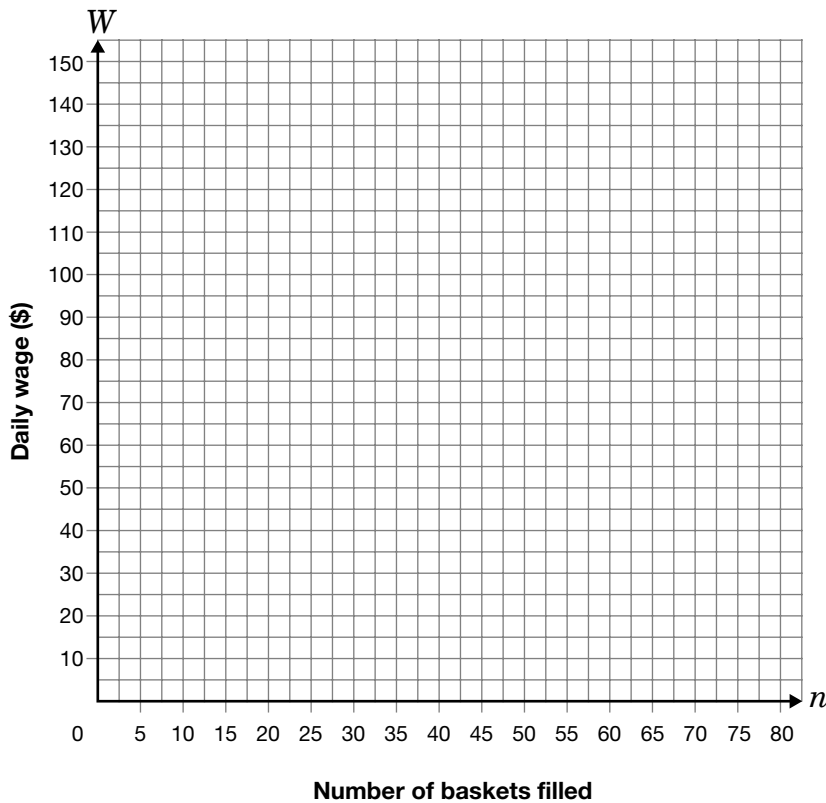
Sanya has a summer job picking berries at a farm. Each day, she is paid a base salary, plus an amount for each basket she fills with berries.

The equation $W = 15 + 1.25n$ represents the relationship between Sanya's **daily wage**, W , in dollars, and the **number of baskets** she fills, n .



- a) Graph the relationship represented by the equation on the grid below.

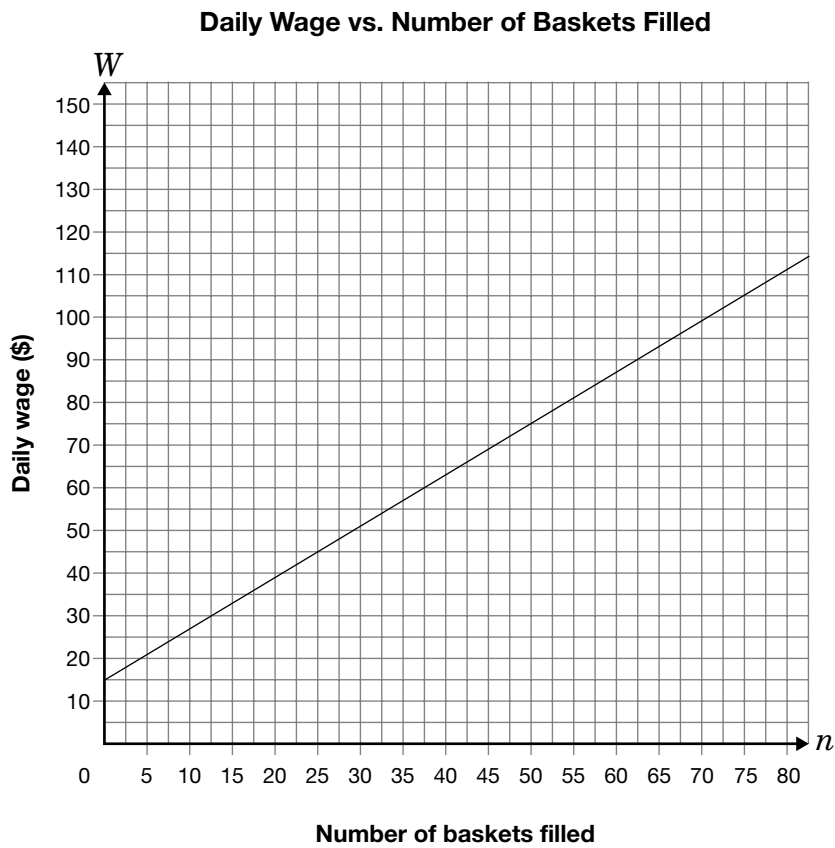
Daily Wage vs. Number of Baskets Filled



- b) Explain what the **slope** of the line means in relation to picking berries.

c) Determine **the number of baskets** that Sanya must fill to have a daily wage of **\$70**. Show your work.

d) Sanya's brother picks cucumbers at another farm. His payment structure is represented on the graph below.



He is offered a **new** payment structure of \$2.00 per basket but **no daily base salary**.

Should Sanya's brother accept this new payment structure?

Explain your answer.