Academic

Grade 9 Assessment of Mathematics

Spring 2006

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

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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.

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

a two soft drinks and two turkey sandwiches

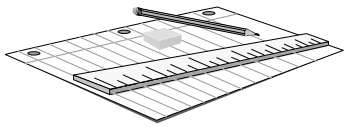
b one tomato soup, one tea and two ham and cheese sandwiches

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 $2x^2 + 5x$?

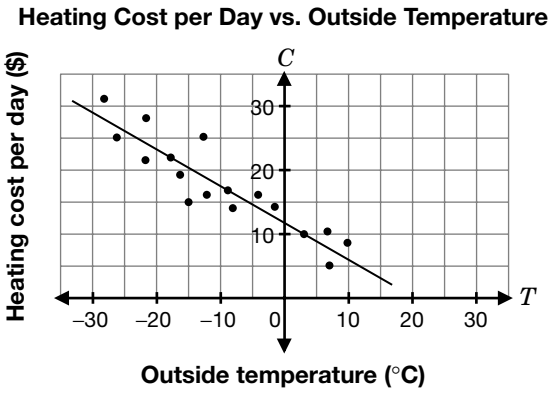
a 21

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.



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	?

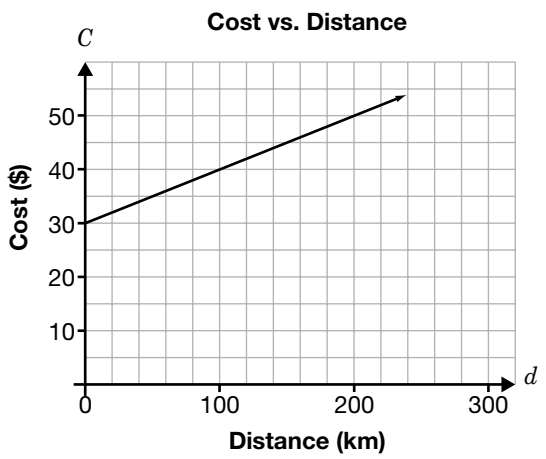
c

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 $y = mx + b$.

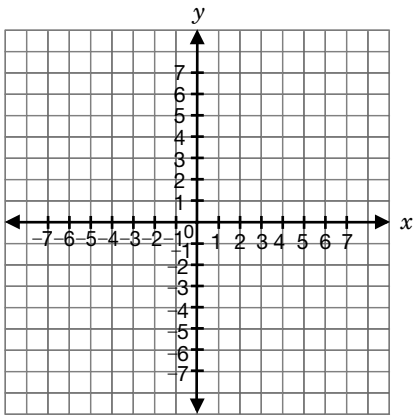
a $y = x + 8$

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 $x = 3$?



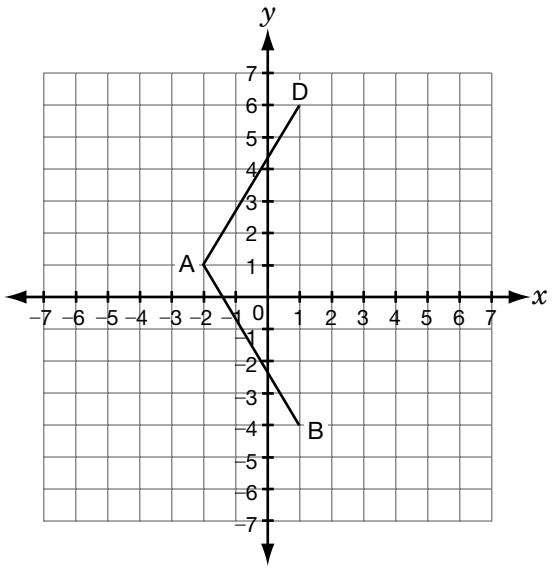
a (2, 3)

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?

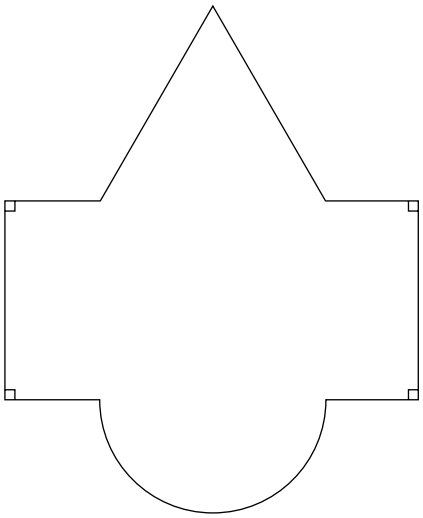
a The volume of the volleyball is 3 times the volume of the tennis ball.

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?

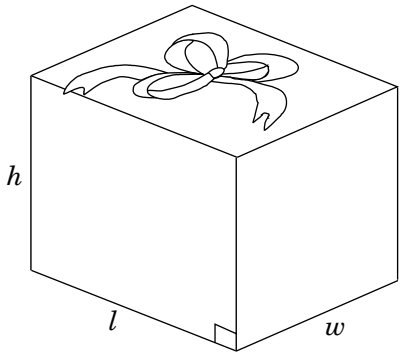
a $\frac{b \times h}{2}$

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?

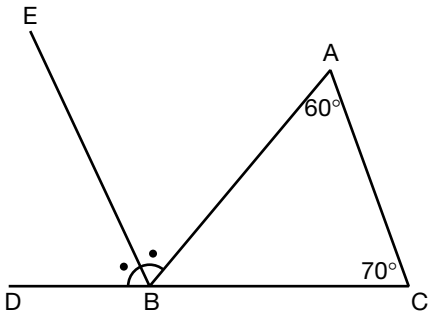
a $V = lwh$

b $A = lw$

c $P = 2l + 2w$

d $SA = 2(wh + lw + lh)$ *

16. In the diagram below, line segment EB bisects ∠ABD.



What is the measure of ∠ABE?

a 60°

b 65° *

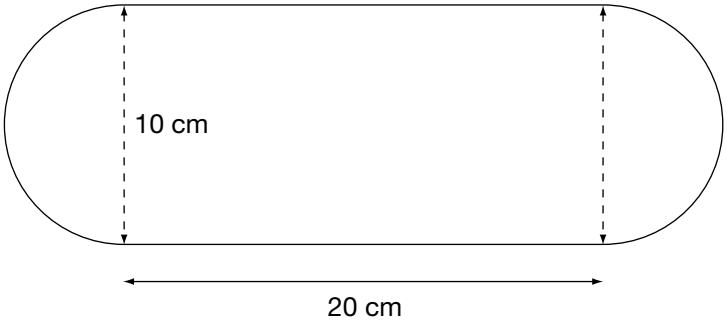
c 70°

d 130°

1. Choc-o-Can

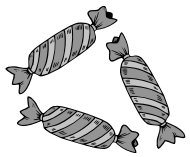
Sweet Shapes is a company that makes chocolate. Each year, the company produces a new can for its specialty chocolates. This year's can is illustrated below. The top of the can swings open for easy access.

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

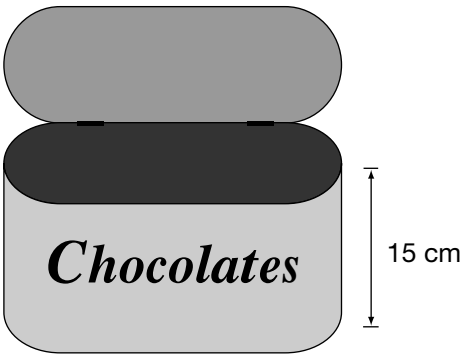


a) Determine the area of the bottom of the can.
Show your work.

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.

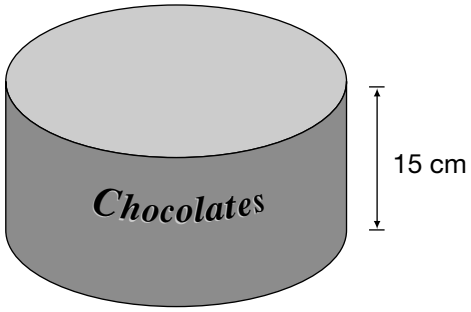


c) Sweet Shapes wants to reduce the size of each chocolate by 15%. Determine the volume of 100 of the reduced chocolates.
Show your work.

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.

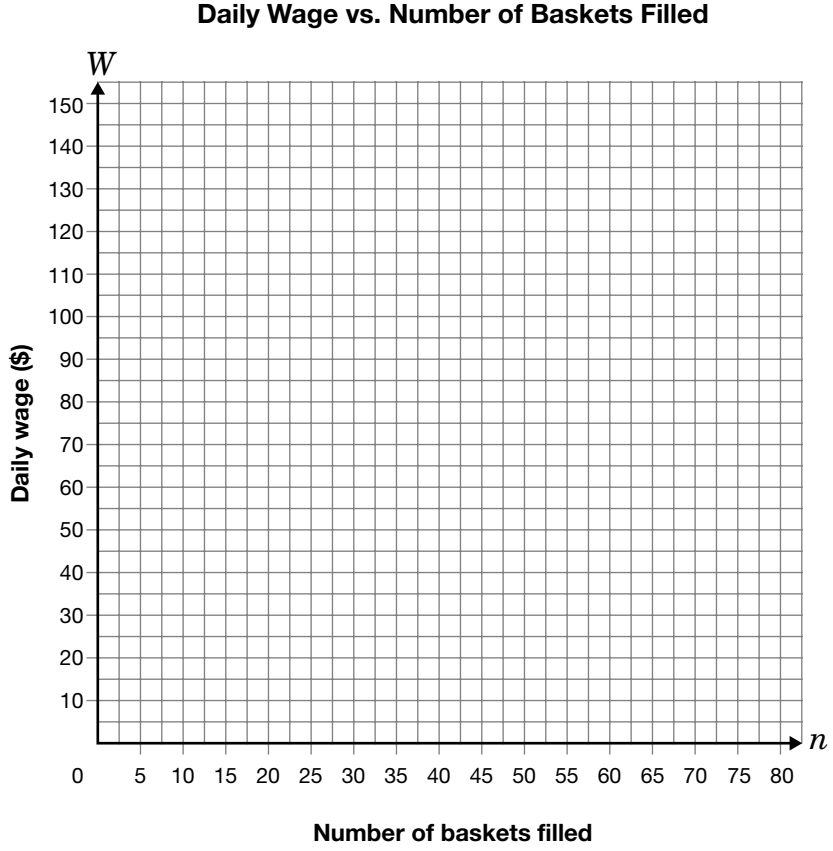


2. Berries for Picking

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.*

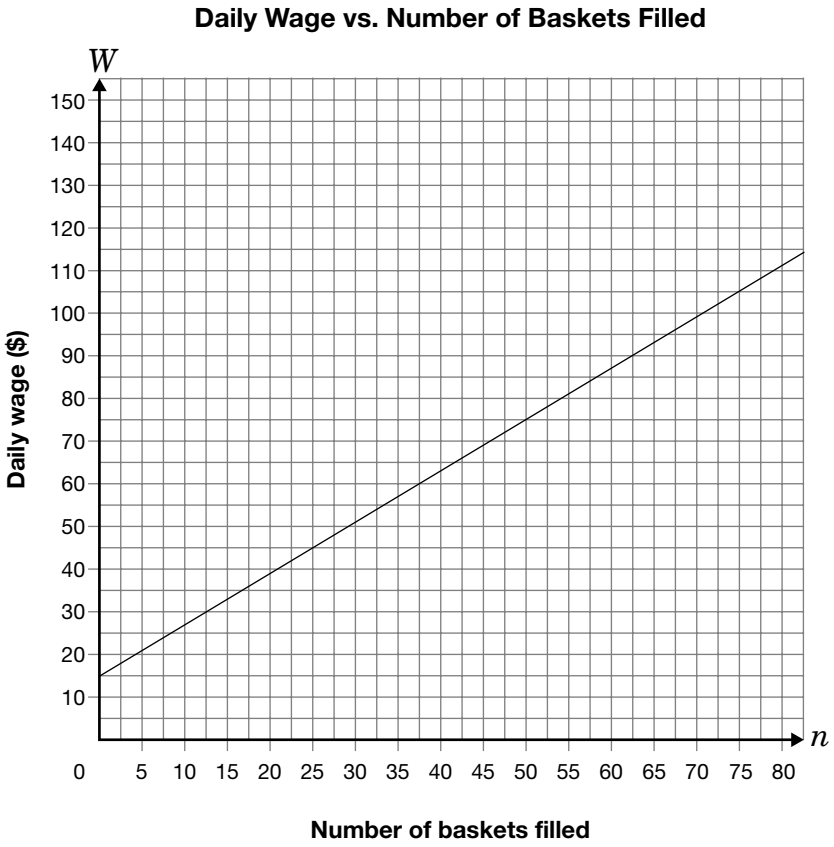
a) Graph the relationship represented by the equation on the grid below.



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.

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