

Mental Math

H-1

Grade 11 Essential Mathematics (30S)

Unit A: Interest and Credit Review

Specific Learning Outcomes: 11.E3.I.1/I.3

General Questions or Review Relating to the SLOs	Answers			
1. Find the simple interest if the principal is \$500, the rate is 10%, and the time is 4 years. ($I = Prt$)	\$200			
2. Find the time in months if the interest is \$15, the principal is \$200, and the rate is 5%. ($t = \frac{I}{Pr}$)	1.5 years or 18 months			
3. If a compound interest investment and a simple interest investment both have a rate of 6%, which will make more money? Why?	Compound interest, as it pays interest on interest.			
4. Gurkiran wants to buy a new car. She has \$15,000 but the new car costs \$30,000. If Gurkiran invests her money at an interest rate of 6%, how long will it take her to double her money?	12 years			
5. Oleh invests \$1000 at an annual rate of 20%, compounded semi-annually. How much money will he have after 6 months?	\$1100			
6. Without making any calculations, determine which investment will make more money. Why? <table border="1"><tr><td>Option A 4.25% Investment for 3 years. Compounded daily.</td><td>or</td><td>Option B 4.25% Investment for 3 years. Compounded monthly.</td></tr></table>	Option A 4.25% Investment for 3 years. Compounded daily.	or	Option B 4.25% Investment for 3 years. Compounded monthly.	Option A. The interest is compounded more often.
Option A 4.25% Investment for 3 years. Compounded daily.	or	Option B 4.25% Investment for 3 years. Compounded monthly.		
7. Which is an example of a low-risk investment: a savings account or real estate?	Savings account			
8. Which is an example of a high-risk investment: a Canada Savings Bond or the stock market?	Stock market			
Other Questions				
9.				
10.				

Mental Math

Grade 11 Essential Mathematics (30S)

Unit A: Interest and Credit Review

Specific Learning Outcomes: 11.E3.I.1/I.2/I.3

General Questions or Review Relating to the SLOs

Answers

- Giuseppe wants to buy a new TV for \$3000. The electronics store offers him a loan at a rate of 20%. Should Giuseppe take the loan or shop around for a better price? Why?
- Jasmine borrowed \$800 to invest. How much money did she lose/gain altogether?

Investment
$P = \$800, r = 10\%, t = 5 \text{ years}$
$I = Prt$
$= 800 \times 0.1 \times 5$
$= \$400$

Money Borrowed
$P = \$800, r = 5\%, t = 5 \text{ years}$
$I = Prt$
$= 800 \times 0.05 \times 5$
$= \$200$

Shop around (20% is high).

She gained \$200.

- How many payments are made on a loan paid monthly, amortized over 5 years?

60

Use the table below to solve questions 4 to 6.

Amortization Table				
Monthly Payment per \$1000 Loan Proceeds				
Annual Rate	1 Year Monthly	2 Years Monthly	3 Years Monthly	4 Years Monthly
5.00%	\$80.50	\$45.50	\$30.40	\$25.50
5.25%	\$80.60	\$45.60	\$30.50	\$25.60
5.50%	\$80.70	\$45.70	\$30.60	\$25.70
5.75%	\$80.80	\$45.80	\$30.70	\$25.80

- Chan needs \$20,000 to repair his flooded basement. He takes out a bank loan at a rate of 5% for 4 years. How much does Chan pay monthly?
- Adrienne is going on vacation and takes out a loan for \$3000 to pay for her expenses. She will pay her credit union \$91.80 a month for 3 years. What is her annual interest rate?
- Claudette borrows \$10,000 to pay for tuition. Her loan is at a rate of 5.5% and she pays \$257 a month. How many years will she be paying this loan?

\$510

5.50%

4 years

Answer questions 7 and 8 using the following information. Oman buys a washer for \$500 and a dryer for \$500 on the buy-now, pay-later plan. On the date of purchase, he must pay the taxes (12%), a delivery charge of \$50, and an administration charge of \$25. If Oman pays for the balance of his purchase in a year, he will not be charged interest.

- How much will Oman pay upfront (at the time of purchase)?
- If Oman pays the balance within a year, how much will his pay-later price be?

\$195

\$1000

Other Questions

Mental Math

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Grade 11 Essential Mathematics (30S)

Unit A: Interest and Credit Review

Specific Learning Outcomes: 11.E3.I.1/I.2/I.3

General Questions or Review Relating to the SLOs	Answers
Answer questions 1 to 4 using the following information. Barpinder is buying a bedroom suite at Future Store. He has three options.	
1. Option 1: Pay \$3000 cash plus tax. How much does the suite cost after 12% taxes?	\$3360
2. Option 2: Barpinder can pay \$100 a month for 3 years. How much would he pay?	\$3600
3. Option 3: Barpinder can put \$1000 down and pay \$100 a month for 2 years. How much would he pay?	\$3400
4. Which option is the cheapest (Option 1, 2, or 3)?	Option 1
5. Vlad's cellphone is broken. A new phone will cost him \$800. The carrying charge for the phone is \$40. What is the percent rate of the carrying charge?	5%
6. Cadence charges \$300 to her credit card on August 12. She knows the purchase is interest-free as long as she pays the balance owing on her next statement, which is due September 15. However, she cannot pay the entire balance. From what day does she pay interest on the \$300?	August 12
7. Samir is excited about his new credit card. He knows he can make purchases on his card and has a 30-day grace period before he pays interest. Because of this grace period, Samir takes out a \$200 cash advance on his card and plans to pay it back in two weeks. What is his mistake?	Interest is charged on cash advances from the day they are withdrawn.
8. Mashercard is offering a credit card with a rate of 18% and 1 Sky Mile for every \$20 you spend. Liam loves Sky Miles! Vassa is offering a credit card with a rate of 16% and coffee points at Squarebucks. Liam does not drink coffee. Which card is better for Liam financially?	Vassa is better because it has a lower interest rate.
Other Questions	
9.	
10.	

Mental Math

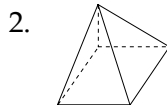
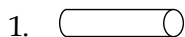
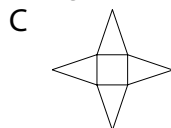
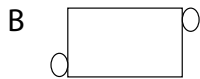
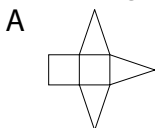
Grade 11 Essential Mathematics (30S)

Unit B: 3-D Geometry Review

Specific Learning Outcomes: 11.E3.G.1/G.3

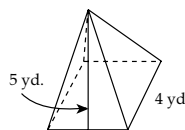
General Questions or Review Relating to the SLOs

Match the 3-D images in question 1 and 2 with the net diagrams below.

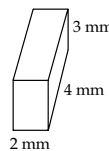


3. What is the surface area of the square pyramid with a base of 4 yd. and a slant height of 5 yd.?

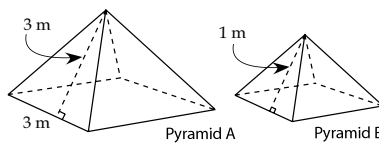
(Area of a square = s^2 ; area of a triangle = $\frac{1}{2}bh$)



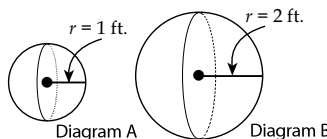
4. What is the surface area of a rectangular prism if the width is 2 mm, the depth is 4 mm, and the height is 3 mm?



5. The work below has a mistake. Find the correct answer. Square pyramid A has a surface area of 27 m^2 . Square pyramid B has each dimension one-third the length of pyramid A, so its surface area is $27 \div 3 = 9 \text{ m}^2$.



6. If the surface area of sphere A is $4\pi \text{ ft.}^2$, what is the surface area of sphere B?



7. Omar wants to paint a square room in his house. Each wall is $20' \times 10'$. There are two windows each $4' \times 5'$ and one door that is $3' \times 7'$. What is the surface area to be painted? Do not count the ceiling.

8. Omar needs to do two coats of paint (meaning he needs to paint twice). If a can of paint covers 300 sq. ft., how many cans of paint does Omar need?

Answers

1. B
2. C

$$56 \text{ yd.}^2$$

$$52 \text{ mm}^2$$

$$27 \div 9 = 3 \text{ m}^2$$

$$4\pi \times 4 = 16\pi \text{ ft.}^2$$

$$800 - 61 = 739 \text{ sq. ft.}$$

5 cans

Other Questions

9.

10.

Mental Math

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Grade 11 Essential Mathematics (30S)

Unit B: 3-D Geometry Review

Specific Learning Outcomes: 11.E3.G.2/G.3

General Questions or Review Relating to the SLOs	Answers
<p>1. Estimate the volume of this sphere. $\left(V = \frac{4}{3}\pi r^3\right)$</p>	<p>$\approx 32 \text{ m}^3$</p>
<p>2. Find the volume of this rectangular pyramid. $\left(V = \frac{1}{3}(lw) \times h\right)$</p>	<p>$24\,000 \text{ mm}^3$</p>
<p>3. Find the mistake. If the volume of Rectangular Pyramid A is 12 yd.^3, find the volume of Rectangular Prism B. <i>Answer:</i> The rectangular prism has a volume of $12 \times 3 = 36 \text{ yd.}$</p>	<p>36 yd.^3 (Answer needs cubic units.)</p>
<p>4. Calculate the capacity of a pyramid if the inside of the top opening is 30 cm by 20 cm and the height is 30 cm. (Capacity = Volume = $\frac{1}{3}lwh$)</p>	<p>6000 cm^3 or 6 L</p>
<p>5. Estimate the capacity of this cylinder if the sides and base are 1 inch thick. Hint: $12 \text{ in.} = 1 \text{ ft.}$ (convert to feet before you use the formula). (Capacity = Volume = $\pi r^2 \times h$)</p>	<p>$\approx 12 \text{ ft.}^3$</p>
<p>6. Would you use calipers or a metre stick to measure the inside of a coffee mug?</p> <p>7. Identify the mistake in the work shown. Do not solve. The Tomato Garden restaurant fills each semi-sphere bowl of soup to the brim (top). Remember $1 \text{ in.}^3 = 0.554 \text{ fluid ounces}$. If the radius of the bowl is 3 inches, then:</p>	<p>Calipers</p> <p>$C = V = \left(\frac{1}{2}\right)\frac{4}{3}\pi r^3 = \left(\frac{1}{2}\right)\frac{4}{3}\pi(3)^3$ $= \left(\frac{1}{2}\right)\left(\frac{4}{3}\right)9\pi = \left(\frac{2}{3}\right)9\pi$ $= 6\pi \text{ in.}^2 \times 0.554$ $= 10.437 \text{ fl. oz.}$</p> <p>$(3)^3$ is NOT 9 $(3)^3$ is 27</p>
<p>8. The capacity of one bowl of soup at the Tomato Garden restaurant is about 30 fluid ounces. If 44 customers order soup, how many fl. oz. of soup did the restaurant serve?</p>	<p>1320 fl. oz.</p>
Other Questions	
<p>9.</p>	
<p>10.</p>	

Mental Math

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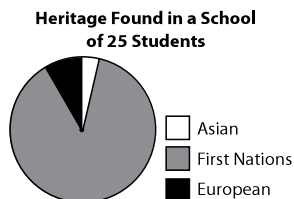
Grade 11 Essential Mathematics (30S)

Unit C: Statistics Review

Specific Learning Outcome: 11.E3.S.1

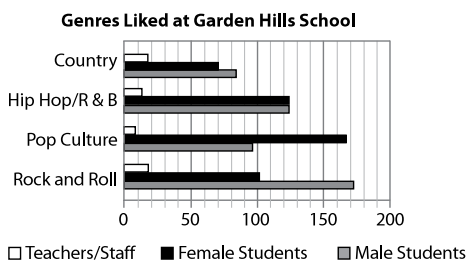
General Questions or Review Relating to the SLOs

Answer questions 1 to 3 using the pie chart.



- About how many students are First Nations?
- Estimate the ratio of European to Asian students.
- Estimate the percentage of students who are First Nations.

Use the bar graph to answer questions 4 to 8.



- Estimate the values for A and B.

Genre	Male Students	Female Students	Teachers/Staff
Hip Hop/R & B	124	126	B:
Country	A:	71	19

- What is the favourite genre among the male students?
- Estimate the ratio of male to female students at Garden Hills School.
- If there are about 1000 people in Garden Hills School, estimate what percentage of them like rock and roll.
- Estimate the ratio of female students to teachers who like pop culture.

Other Questions

9.

10.

Answers

≈ 21

3:1

≈ 84%

A = ≈ 80 or 82
B = ≈ 10 or 12

Rock and Roll

≈ 1:1

29% or 30%

≈ 17:1 or 20:1

Mental Math

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Grade 11 Essential Mathematics (30S)

Unit C: Statistics Review

Specific Learning Outcome: 11.E3.S.1

General Questions or Review Relating to the SLOs

Answer questions 1 to 4 using the bar graph.



1. Estimate the number of people who voted for Valentine's Day gifts.
2. Estimate the number of votes for teddy bears and candy.
3. Estimate how many more chose chocolates than teddy bears.
4. Which gift is chosen by about 20% of people?

≈ 160

≈ 60

≈ 20

Candy

Answer questions 5 to 8 using the information provided. This data is based on polling 100 men and 100 women for a total of 200 participants.

Cellphone Use (min./month)	Men	Women
Under 50 min./month	47	49
50–100 min./month	17	17
100–200 min./month	12	16
Over 200 min./month	24	18

5. How many people used under 50 min./month?
6. If the poll used a total of 50 participants instead of 200, predict how many people would have used 100 to 200 min./month.
7. Which range of cellphone use accounts for 14% of the total number of participants?
8. Which range of cellphone use has the largest difference between men and women?

96

$3 + 4 = 7$

100–200 min./month

over 200 min./month

Other Questions

9.

10.

Answers

Mental Math

H-8

Grade 11 Essential Mathematics (30S)

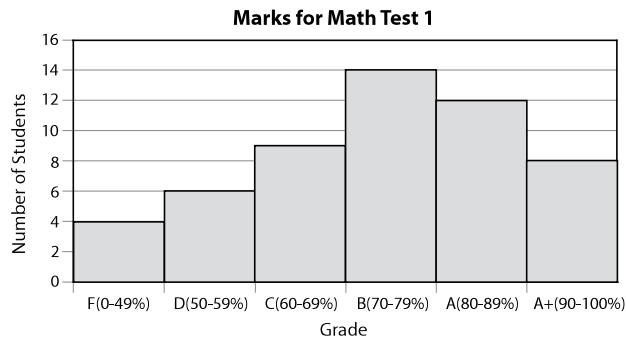
Unit C: Statistics Review

Specific Learning Outcome: 11.E3.S.1

General Questions or Review Relating to the SLOs

Answers

Answer questions 1 to 4 using the bar graph.



- How many students wrote the test?
- Approximately what percentage of students got between 70% and 89%?
- How many more students received a grade of B compared to a grade of D?
- Which grade ranges are in a 3:1 ratio?

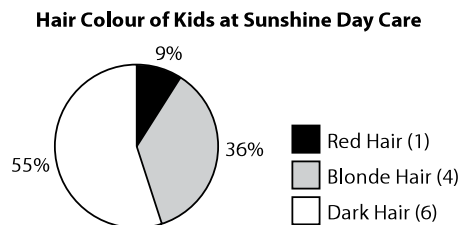
53

≈ 50%

8

A:F

Answer questions 5 to 8 using the circle graph.



- How many kids do not have dark hair?
- If there were 33 kids instead of 11 kids, predict how many of them would have blonde hair.
- What is the percent difference between dark-haired and red-haired kids?
- If the red-haired kid left the day care, what would be the percent of blonde-haired kids?

5

12

46%

40%

Other Questions

9.

10.

Mental Math

H-9

Grade 11 Essential Mathematics (30S)

Unit D: Managing Money Review

Specific Learning Outcome: 11.E4.M.1

General Questions or Review Relating to the SLOs	Answers
1. OJ and Elizabeth prepared a budget. OJ earns \$650 and Elizabeth earns \$500 monthly. How much more does OJ earn each month?	\$150
2. Elizabeth would like to take a course next year. The course costs \$350 and is due in 10 months. How much does she need to save monthly to do this?	\$35 per month
3. OJ receives a car from his parents for his 21st birthday. He has to pay \$180 per month for car insurance, \$100 per month on gas, and \$50 per month on maintenance. What are the total monthly expenses?	\$330
4. Typically, which monthly expense is largest: hydro, groceries, car payment, or rent?	Rent
5. If OJ cuts entertainment by \$55 and personal care by \$47, how much extra could he save monthly?	\$102
6. Elizabeth's net pay is \$500 per month. She plans to save 10% each month for a vacation. How much will she have saved in one year?	\$600
7. OJ's net pay is \$650 per month. How much does he earn in one year?	\$7800
8. Elizabeth pays \$600 per year for car insurance. How much should she save each month to pay for the car insurance?	\$50
Other Questions	
9.	
10.	

Mental Math

H-10

Grade 11 Essential Mathematics (30S)

Unit D: Managing Money Review

Specific Learning Outcomes: 11.E4.M.1/M.2

General Questions or Review Relating to the SLOs

Answers

- Which unexpected expense costs more in a year?
 - Your car breaks down, costing you \$1100.
 - You get demoted at work, losing \$100 a month.
- You need to save 10% of your annual income. How much do you need to save in a year if your income is \$48,000?
- If you save \$400 per month, how much will you have after one year?
- Rochelle has a combination account that earns her interest on any money over \$600. If she has \$1800 in her account, how much of it earns interest?
- Javaan is a member of Royalty Bank. She goes to a privately owned ATM and takes out money. This costs her \$1.50 each time. If Javaan does this 12 times, how much does this cost her?
- If Javaan takes out money from a private ATM 10 times every month, at \$1.50 each time, how much will this cost her in a year?

Demoted
at work

\$4800

\$4800

\$1200

\$18

\$180

- You have \$108.12 in your chequing account. You write a cheque for \$44.00. How much is left in your account?

\$64.12

- You have \$203.20 in your chequing account. You deposit \$29.90. How much will you have in your account?

\$233.10

Other Questions

9.

10.

Mental Math

H-11

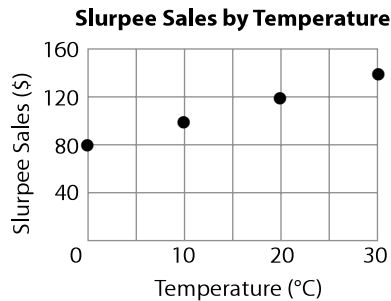
Grade 11 Essential Mathematics (30S)

Unit E: Relations and Patterns Review

Specific Learning Outcome: 11.E4.R.5

General Questions or Review Relating to the SLOs

Use the scatterplot to answer questions 1 to 4.



Answers

- Does this graph show a linear or non-linear relationship?
- Interpolate to determine how much money will be made on Slurpee sales when the temperature is 15°C .
- Extrapolate to determine how much money will be made on Slurpee sales when the temperature is 40°C .
- Extrapolate to determine how much money will be made on Slurpee sales when the temperature is -10°C .

Linear

- What are the next three numbers in the linear pattern 9, 18, 27, 36 . . . ?
- Gas costs \$1.25 per litre. If a car's tank has 20 L of gas in an 80 L tank, how much will it cost to fill it with gas?

\$110

\$160

\$60

45, 54, 63

\$75

Use the following information to answer questions 7 and 8. A dog (d) will usually have 5 or 6 puppies in a litter. Use the following formula to determine how many puppies (P) will be born. ($P = 5.5d$)

- How many puppies do you expect will be born if four dogs give birth?
- How many puppies do you expect will be born if seven dogs give birth?

22 puppies

38 or 39 puppies

Other Questions

9.

10.

Mental Math

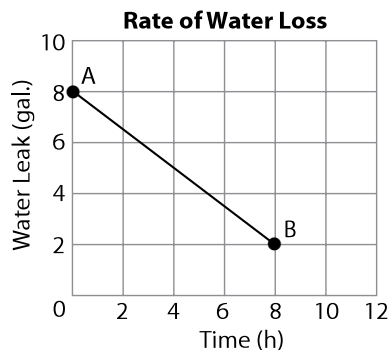
H-12

Grade 11 Essential Mathematics (30S)

Unit E: Relations and Patterns Review Specific Learning Outcomes: 11.E4.R.1/R.2/R.3/R.4

General Questions or Review Relating to the SLOs

An RV has a water tank with 8 gallons of water. It is leaking. Use the graph to answer questions 1 to 6.



1. What is the slope of the line as a fraction? $\left(\text{slope} = \frac{\text{vertical change}}{\text{horizontal change}} \right)$
2. What is the slope of the line as a decimal?
3. Extrapolate to determine when the tank will be empty.
4. Estimate when the tank was half empty.
5. One gallon is approximately 3.75 litres. How many litres is the 8 gallon tank?
6. How many 4 litre jugs would you need to transfer all the water from an 8 gallon tank?
7. A building blueprint has a scale of 1 cm : 2 ft. If a door is 3' × 8', how small should it be drawn on the blueprint?
8. A map has a scale of 1 cm : 100 km. The distance measured between Winnipeg and Calgary is 13.3 cm. How many km apart are the two cities?

Answers

$$-\frac{6}{8} = -\frac{3}{4} \text{ gal./h}$$

-0.75 gal./h

About 10.5 h
(10 h, 30 min.)

About 5.25 h
(5 hr, 15 min.)

30 L

8 jugs (1 jug is half full)

1.5 cm × 4 cm

1330 km

Other Questions

9.

10.

Mental Math

H-13

Grade 11 Essential Mathematics (30S)

Unit F: Trigonometry Review

Specific Learning Outcome: 11.E4.TG.1

General Questions or Review Relating to the SLOs		Answers
1. What do D and A stand for in BEDMAS?		Division/ Addition
2. Evaluate: $45 + 12 \times (4 - 3)$		57
Simplify questions 3 and 4. An example is provided.	$\sqrt{500}$ $= \sqrt{(10^2)(5)}$ $= 10\sqrt{5}$	
3. $\sqrt{30000}$		$100\sqrt{3}$
4. $\sqrt{4000}$		$20\sqrt{10}$
5. Evaluate: $100 \div \frac{1}{2}$		200
Use right triangle DEF to solve questions 6 to 8.		
6. Find the measure of angle θ in the above right triangle.		30°
7. If side $d = 20$ ft, what is the measure of side e ? Hint: $\cos 60^\circ = 0.5 = \frac{1}{2}$		40 ft.
8. If side e is 8 cm, what is the measure of side d ?		4 cm
Other Questions		
9.		
10.		

Mental Math

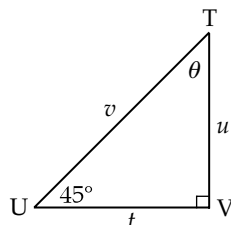
Grade 11 Essential Mathematics (30S)

Unit F: Trigonometry Review

Specific Learning Outcome: 11.E4.TG.1

General Questions or Review Relating to the SLOs

Use right triangle TUV to solve questions 1 to 3.



- Find the measure of angle θ in the above right triangle.
- If side $t = 40$ ft., what is the value of side u ? **Hint:** $\tan 45^\circ = 1$
- Find the measure of side v if side $u = 1$ cm and $t = 1$ cm.
- If the two shorter sides of a right triangle are 3 yd. and 4 yd., what is the length of the longest side?
- If the two shorter sides of a right triangle are 30 mm and 40 mm, what is the length of the longest side?

Answers

45°

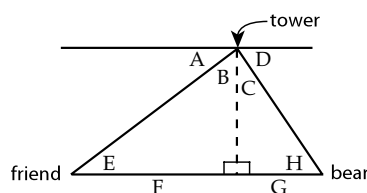
40 ft.

$\sqrt{2}$ cm

5 yd.

50 mm

A fire ranger is in her tower. She spots a bear east of the tower at a 12° angle of depression. Her friend is 17 m west of the tower. Use the diagram to answer questions 6 to 8.



- Where would you label 12° and 17 m on the diagram? (Choose from A, B, C, D, E, F, G, and H.)
- Find the measure of angle C.
- If the bear is 4.7 m from the tower (G), how far is the bear from her friend?

$12^\circ = D$ and H
17 m = F

78°

21.7 m

Other Questions

9.

10.

Mental Math

H-15

Grade 11 Essential Mathematics (30S)

Unit G: Design Modelling Review

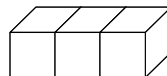
Specific Learning Outcome: 11.E4.D.1

General Questions or Review Relating to the SLOs

Answers

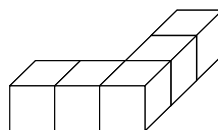
For questions 1 to 4, the square side of each cube has a surface area of 10 cm^2 . **Hint:** You are not given a side length this time.

1. What is the surface area of the stack of 3 cubes as shown?



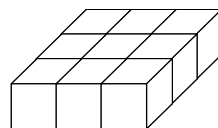
140 cm^2

2. What is the surface area of the stack of 5 cubes as shown?



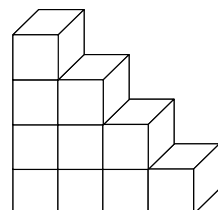
220 cm^2

3. What is the surface area of the stack of 9 cubes as shown?



300 cm^2

4. What is the surface area of the stack of 10 cubes as shown?



360 cm^2

5. Evaluate: one-third of twelve.

4

6. Solve: $3x + 5 = 26$

$x = 7$

7. What is 12% of 50?

6

8. You earn \$11 per hour. How much do you earn in 40 hours?

\$440

Other Questions

9.

10.

Mental Math

Grade 11 Essential Mathematics (30S)

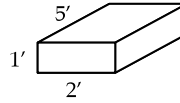
H-16

Unit G: Design Modelling Review

Specific Learning Outcome: 11.E4.D.1

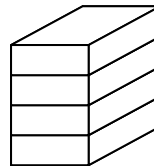
General Questions or Review Relating to the SLOs

For questions 1 to 4, each rectangle has dimensions as shown.



1. What is the surface area of one rectangle?

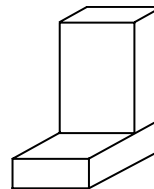
2. What is the surface area of the stack of four rectangles?



3. What is the surface area of the stack of three rectangles?



4. What is the surface area of the stack of two rectangles? **Hint:** Find the surface area of two full rectangles first, then subtract the covered area.



5. Evaluate: one-fifth of fifteen

6. Solve: $16 = 4x - 8$

7. What is 11% of 150?

8. You earn \$12 per hour. How much do you earn in 8 hours?

Answers

34 sq. ft.

76 sq. ft.

82 sq. ft.

64 sq. ft.

3

$x = 6$

16.5

\$96

Other Questions

9.

10.

