Name : _____ Score : _____

Teacher : _____ Date : _____

Converting Fahrenheit and Celsius

1) 48° C _____

2) 7° C _____

3) 73° F _____

4) 74° F _____

5) 45° C _____

6) 108° F _____

7) 64° F _____

8) 49° F _____

9) 17° C _____

10) 35° F _____

11) 57° F _____

12) 85° F _____

13) 12° C _____

14) 12° C _____

15) 39° F _____

16) 27° C _____

17) 21° C _____

18) 37° F _____

19) 45° C _____

20) 36° C _____

21) 88° F _____

22) 27° C _____

23) 100° F _____

24) 30° C _____

25) 56° F _____

26) 35° C _____

27) 18° C _____

28) 114° F _____

29) 43° F _____

30) 13° C _____

Name : _____ Score : _____

Teacher : _____ Date : _____

Liquid Measure Quiz

1) _____ cups = 8 pints

2) _____ cup = 1/2 pint

3) _____ pints = 1 quarts

4) 16 cups = _____ quarts

5) _____ tsp = 1 tbsp

6) _____ pints = 4 gallon

7) 8 pints = _____ gallon

8) 4 quarts = _____ gallon

9) 4 cups = _____ quart

10) 1 pint = _____ quart

11) 16 cups = _____ gallon

12) _____ cups = 4 pints

13) 4 cups = _____ pints

14) _____ quart = 1/4 gallon

15) _____ quarts = 1/2 gallon

16) _____ pints = 1/2 gallon

17) _____ cups = 1 pint

18) 2 pints = _____ gallon

19) 12 tsp = _____ tbsp

20) 4 pints = _____ quarts

Name : _____ Score : _____

Teacher : _____ Date : _____

Converting Feet and Inches

Convert to Inches.

1) 9 feet $3\frac{1}{16}$ inches _____

2) 5 feet $2\frac{7}{8}$ inches _____

3) 9 feet $5\frac{1}{2}$ inches _____

4) 2 feet $9\frac{15}{16}$ inches _____

5) 5 feet $11\frac{1}{4}$ inches _____

6) 4 feet $8\frac{1}{2}$ inches _____

7) 2 feet $9\frac{1}{4}$ inches _____

8) 8 feet $9\frac{3}{4}$ inches _____

9) 6 feet $6\frac{1}{4}$ inches _____

10) 2 feet $6\frac{1}{2}$ inches _____

Convert to Feet and Inches.

1) _____ $88\frac{1}{4}$ inches

2) _____ $119\frac{1}{2}$ inches

3) _____ $61\frac{1}{16}$ inches

4) _____ $68\frac{1}{4}$ inches

5) _____ $32\frac{3}{8}$ inches

6) _____ $31\frac{1}{2}$ inches

7) _____ $102\frac{9}{16}$ inches

8) _____ $16\frac{1}{4}$ inches

9) _____ $31\frac{15}{16}$ inches

10) _____ $40\frac{5}{8}$ inches

Name : _____ Score : _____

Teacher : _____ Date : _____

Converting English and Metric

1) 12 miles = _____ kilometers

2) _____ cubic feet = 14 cubic meters

3) 5 miles = _____ kilometers

4) 20.5 feet = _____ meters

5) 5.5 cubic inches = _____ milliliters

6) 2.5 square yards = _____ square meters

7) _____ cubic yards = 3 cubic meters

8) _____ square feet = 21.5 square meters

9) 13 cubic feet = _____ cubic meters

10) 9.5 square inches = _____ square centimeters

11) 15 inches = _____ centimeters

12) _____ square feet = 11.5 square meters

13) _____ cubic yards = 6 cubic meters

14) _____ feet = 17 meters

15) _____ yards = 16 meters

16) _____ inches = 8.5 centimeters

17) _____ square inches = 18.5 square centimeters

18) 4 square yards = _____ square meters

19) 7.5 yards = _____ meters

20) _____ cubic inches = 4.5 milliliters

Name : _____ Score : _____

Teacher : _____ Date : _____

Converting Fahrenheit and Celsius

1) 48° C 118.4 °F

2) 7° C 44.6 °F

3) 73° F 22.78 °C

4) 74° F 23.33 °C

5) 45° C 113 °F

6) 108° F 42.22 °C

7) 64° F 17.78 °C

8) 49° F 9.44 °C

9) 17° C 62.6 °F

10) 35° F 1.67 °C

11) 57° F 13.89 °C

12) 85° F 29.44 °C

13) 12° C 53.6 °F

14) 12° C 53.6 °F

15) 39° F 3.89 °C

16) 27° C 80.6 °F

17) 21° C 69.8 °F

18) 37° F 2.78 °C

19) 45° C 113 °F

20) 36° C 96.8 °F

21) 88° F 31.11 °C

22) 27° C 80.6 °F

23) 100° F 37.78 °C

24) 30° C 86 °F

25) 56° F 13.33 °C

26) 35° C 95 °F

27) 18° C 64.4 °F

28) 114° F 45.56 °C

29) 43° F 6.11 °C

30) 13° C 55.4 °F

Name : _____ Score : _____

Teacher : _____ Date : _____

Liquid Measure Quiz

1) 16 cups = 8 pints

2) 1 cup = 1/2 pint

3) 2 pints = 1 quarts

4) 16 cups = 4 quarts

5) 3 tsp = 1 tbsp

6) 8 pints = 4 gallon

7) 8 pints = 1 gallon

8) 4 quarts = 1 gallon

9) 4 cups = 1 quart

10) 1 pint = 1/2 quart

11) 16 cups = 1 gallon

12) 8 cups = 4 pints

13) 4 cups = 2 pints

14) 1 quart = 1/4 gallon

15) 2 quarts = 1/2 gallon

16) 4 pints = 1/2 gallon

17) 2 cups = 1 pint

18) 2 pints = 1/4 gallon

19) 12 tsp = 4 tbsp

20) 4 pints = 2 quarts

Name : _____ Score : _____

Teacher : _____ Date : _____

Converting Feet and Inches

Convert to Inches.

1) 9 feet $3\frac{1}{16}$ inches $111\frac{1}{16}$ inches

2) 5 feet $2\frac{7}{8}$ inches $62\frac{7}{8}$ inches

3) 9 feet $5\frac{1}{2}$ inches $113\frac{1}{2}$ inches

4) 2 feet $9\frac{15}{16}$ inches $33\frac{15}{16}$ inches

5) 5 feet $11\frac{1}{4}$ inches $71\frac{1}{4}$ inches

6) 4 feet $8\frac{1}{2}$ inches $56\frac{1}{2}$ inches

7) 2 feet $9\frac{1}{4}$ inches $33\frac{1}{4}$ inches

8) 8 feet $9\frac{3}{4}$ inches $105\frac{3}{4}$ inches

9) 6 feet $6\frac{1}{4}$ inches $78\frac{1}{4}$ inches

10) 2 feet $6\frac{1}{2}$ inches $30\frac{1}{2}$ inches

Convert to Feet and Inches.

1) 7 feet $4\frac{1}{4}$ inches $88\frac{1}{4}$ inches

2) 9 feet $11\frac{1}{2}$ inches $119\frac{1}{2}$ inches

3) 5 feet $1\frac{1}{16}$ inch $61\frac{1}{16}$ inch

4) 5 feet $8\frac{1}{4}$ inches $68\frac{1}{4}$ inches

5) 2 feet $8\frac{3}{8}$ inches $32\frac{3}{8}$ inches

6) 2 feet $7\frac{1}{2}$ inches $31\frac{1}{2}$ inches

7) 8 feet $6\frac{9}{16}$ inches $102\frac{9}{16}$ inches

8) 1 feet $4\frac{1}{4}$ inches $16\frac{1}{4}$ inches

9) 2 feet $7\frac{15}{16}$ inches $31\frac{15}{16}$ inches

10) 3 feet $4\frac{5}{8}$ inches $40\frac{5}{8}$ inches

Name : _____ Score : _____

Teacher : _____ Date : _____

Converting English and Metric

1) 12 miles = 19.31 kilometers

2) 494.41 cubic feet = 14 cubic meters

3) 5 miles = 8.05 kilometers

4) 20.5 feet = 6.25 meters

5) 5.5 cubic inches = 90.13 milliliters

6) 2.5 square yards = 2.09 square meters

7) 3.92 cubic yards = 3 cubic meters

8) 231.42 square feet = 21.5 square meters

9) 13 cubic feet = 0.37 cubic meters

10) 9.5 square inches = 61.29 square centimeters

11) 15 inches = 38.1 centimeters

12) 123.78 square feet = 11.5 square meters

13) 7.85 cubic yards = 6 cubic meters

14) 55.77 feet = 17 meters

15) 17.5 yards = 16 meters

16) 3.35 inches = 8.5 centimeters

17) 2.87 square inches = 18.5 square centimeters

18) 4 square yards = 3.34 square meters

19) 7.5 yards = 6.86 meters

20) 0.27 cubic inches = 4.5 milliliters

Grade 10 Review 1

Multiple Choice

Identify the choice that best completes the statement or answers the question.

___ 1. A chainsaw's engine uses a mixture of 30 L of gas and 2 L of oil. How much oil must you mix with 5 L of gas to refuel the chainsaw?

a. 0.33 L of oil
b. 12 L of oil
c. 0.4 L of oil
d. 75 L of oil

___ 2. If 4 cans of paint cover 192 m^2 of wall space, how many cans of paint will you need to cover 270 m^2?

a. 6 cans of paint
b. 5 cans of paint
c. 9 cans of paint
d. 3 cans of paint

___ 3. If 5 cm on a map represents 5 km of actual ground, how many centimetres would 25 km of actual ground be on the map?

a. 25 cm
b. 20 cm
c. 1 cm
d. 25 cm

___ 4. Ned is a pool cleaner. He offers a deal in which he charges $1000.00 to clean your pool 20 times. How much money do you save per cleaning using the deal if it regularly costs $55.00 for one cleaning?

a. $100.00
b. $5.00
c. $50.00
d. $10.00

___ 5. If 12 bananas cost $4.68, how much does 1 banana cost?

a. $0.39
b. $0.31
c. $0.35
d. $0.55

___ 6. Noreen is placing tile on her kitchen floor that measures 7.5 m by 4.5 m. The tile costs $16.15 per square metre. How much will Noreen spend on tile?

a. $436.05
b. $654.07
c. $387.60
d. $545.06

___ 7. What is the difference in price per unit between chicken sold at $23.24/kg and turkey sold at $5.17/250 g?

a. $3.07
b. $0.11
c. $2.56
d. $2.05

___ 8. Because the cost of ingredients has gone up, Anders has decided to increase the cost of food at his Edmonton café by 11%. How much will a customer pay for a sandwich that used to cost $6.49? Include 5% GST.

a. $7.56
b. $7.20
c. $6.81
d. $9.08

___ 9. The wholesale price of a rake is $9.95. The markup is 105%. What is the retail price of the rake?

a. $20.40
b. $16.32
c. $15.30
d. $24.48

____ 10. Which of the following is the best deal for a new 1TB hard drive that regularly costs $109.99 in Saskatchewan, where GST is 5% and PST is 5%?

Sale Option	Discount
i	20% off
ii	85% of the regular price
iii	Don't pay the tax!
iv	$\frac{1}{4}$ off the regular price!

a. ii
b. iii
c. i
d. iv

____ 11. The regular price of honey ham at a the grocery deli is $2.39/100 g. If the ham is on sale for 25% off, what is the cost of 275 g?

a. $6.16
b. $3.70
c. $6.23
d. $4.93

____ 12. If Linda purchased 10 820 Thailand bhat for $380.00 CAD, what was the bank's selling rate?

a. 0.028096
b. 28.473684
c. 0.03512
d. 0.05268

____ 13. If Pietr sold 1225 Scottish pounds for $2445.28 CAD, which of the following is closest to the bank's buying rate?

a. 1.59692
b. 1.99615
c. 0.50097
d. 2.99423

____ 14. The bank's selling rate for Czech Republic koruna is 0.06238. How many koruna will you get for $150.00 CAD?

a. 2404.62 koruna
b. 31.19 koruna
c. 6.26 koruna
d. 39 968.03 koruna

____ 15. The bank's selling rate for Brazilian reals is 0.697000 and the buying rate is 0.534900. How many Canadian dollars would you get for 150 reals?

a. $215.21
b. $80.23
c. $104.55
d. $280.43

Short Answer

1. High End Games video game store makes a profit of $1475.00 on the sale of 220 games. How much profit would the store make on the sale of 150 games?

2. Organize the prices below from lowest to highest unit rate.

355 mL of pop	$0.44
2 L of pop	$1.39
1 L of pop	$0.64

3. Raul is buying chicken wire that he will use to reinforce concrete in a retaining wall. He can buy a 25-ft roll for $17.72, a 50-ft roll for $39.25, or a 100-ft roll for $72.70. Which is the best buy?

4. Soraya is a contractor renovating a house. She bought 15 hinges costing $288.60 to install new doors. How much did each hinge cost?

5. Victor is renting a hotel room for 7 nights in Spain. The cost of the hotel room is 90.00 euros per night. Victor exchanges his Canadian dollars for euros before he leaves Canada. The bank buys euros at $1.58057 CAD and sells euros at $1.64876 CAD. How much will the hotel cost him, in Canadian dollars?

roblem

1. Howard works as a carpenter. He has been asked to check if the grade of the ramp leading into the public library is safe for wheelchair access. In order to be safe, the ramp must have a ratio of height to length no greater than 1:12. Howard measures the ramp to be 20 feet long and 2 feet high. Find the ratio of height to length. Is the ramp safe for wheelchair use?

2. To produce a certain shade of green paint, a painter must mix 5 parts yellow paint with 7 parts blue paint. If the painter requires 4 litres of green paint, how much yellow and blue paint does he need? Round your answer to 1 decimal place.

3. Lumber is purchased by the foot. To purchase 6 pieces of lumber that are each 8 feet long costs $84.00. How much will it cost to purchase 240 feet of lumber?

4. Juliet, a carpenter, receives a discount of 15% on all siding from a wholesaler. Siding regularly costs $\$13.75/m^2$. She is installing siding on a house over an area of 210 m^2.

   In addition to the cost of materials, Juliet charges her customers $21.00/hour. It will take 41 hours to finish this house.

   a) How much will Juliet charge, including materials and her hourly rate, if she does not give the discount to her customer?

   b) How much will she charge if she does give the discount to her customer?

   c) What is the difference in cost to the customer with and without the discount?

   d) Why might Juliet choose to give her customer the discount?

5. You have 1500 zloty, 844 kroon, and 496 USD. How much is that worth in Canadian dollars?

Canadian Bank Foreign Exchange Rates for Buying and Selling			
Country	**Currency**	**Buying Rate**	**Selling Rate**
Estonia	Kroon (EEK)	0.079 54	0.099 56
Poland	Zloty (PLN)	0.3234	0.3933
United States	Dollar (USD)	1.1210	1.1810

Grade 10 Review 1
Answer Section
MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: Easy REF: 1.1
   OBJ: Number LOC: N-SO1 TOP: Proportional Reasoning
   KEY: Ratio
2. ANS: A PTS: 1 DIF: Moderate REF: 1.1
   OBJ: Number LOC: N-SO1 TOP: Proportional Reasoning
   KEY: Ratio
3. ANS: D PTS: 1 DIF: Moderate REF: 1.1
   OBJ: Number LOC: N-SO1 TOP: Proportional Reasoning
   KEY: Ratio
4. ANS: B PTS: 1 DIF: Moderate REF: 1.2
   OBJ: Number LOC: N-SO1 TOP: Unit Price
5. ANS: A PTS: 1 DIF: Easy REF: 1.2
   OBJ: Number LOC: N-SO1 TOP: Unit Price
6. ANS: D PTS: 1 DIF: Moderate REF: 1.2
   OBJ: Number LOC: N-SO1 TOP: Unit Price
7. ANS: C PTS: 1 DIF: Moderate REF: 1.2
   OBJ: Number LOC: N-SO1 TOP: Unit Price
8. ANS: A PTS: 1 DIF: Easy REF: 1.3
   OBJ: Number LOC: N-SO1 TOP: Setting a Price
9. ANS: A PTS: 1 DIF: Easy REF: 1.3
   OBJ: Number LOC: N-SO1 TOP: Setting a Price
   KEY: Markup
10. ANS: D PTS: 1 DIF: Moderate REF: 1.4
    OBJ: Number LOC: N-SO1 TOP: On Sale!
11. ANS: D PTS: 1 DIF: Moderate REF: 1.4
    OBJ: Number LOC: N-SO1 TOP: On Sale!
12. ANS: C PTS: 1 DIF: Easy REF: 1.5
    OBJ: Number LOC: N-SO1 TOP: Currency Exchange Rates
    KEY: Selling Rate
13. ANS: B PTS: 1 DIF: Easy REF: 1.5
    OBJ: Number LOC: N-SO1 TOP: Currency Exchange Rates
    KEY: Buying Rate
14. ANS: A PTS: 1 DIF: Easy REF: 1.5
    OBJ: Number LOC: N-SO1 TOP: Currency Exchange Rates
    KEY: Selling Rate
15. ANS: B PTS: 1 DIF: Easy REF: 1.5
    OBJ: Number LOC: N-SO1 TOP: Currency Exchange Rates
    KEY: Buying Rate | Selling Rate

SHORT ANSWER

1. ANS: Calculate High End Games's profit per game.
   $1475.00 ÷ 220 = $6.70

   The store makes a profit of $6.70 per game.

   Calculate the profit on the sale of 150 games.
   $6.70 × 150 = $1005.68
   High End Games makes a profit of $1005.68 on the sale of 150 games.

   PTS: 1 DIF: Easy REF: 1.1 OBJ: Number
   LOC: N-SO1 TOP: Proportional Reasoning KEY: Rate

2. ANS:
Calculate the unit prices.

355 mL of pop: $0.44 \div 355 = \$0.001239/mL$
2 L of pop: $1.39 \div 2000 = \$0.000695/mL$
1 L of pop: $0.645 \div 1000 = \$0.000645/mL$

Lowest to highest in unit rate:
1 L of pop
2 L of pop
355 mL of pop

PTS: 1 DIF: Moderate REF: 1.2 OBJ: Number
LOC: N-SO1 TOP: Unit Price

3. ANS:
Calculate the unit price of each roll.

25-ft roll:
$\frac{\$17.72}{25\text{ ft}} = \$0.709/ft$

50-ft roll:
$\frac{\$39.25}{50\text{ ft}} = \$0.785/ft$

100-ft roll:
$\frac{\$72.70}{100\text{ ft}} = \$0.727/ft$

The 25-ft roll is the best price.

PTS: 1 DIF: Moderate REF: 1.2 OBJ: Number
LOC: N-SO1 TOP: Unit Price

4. ANS:
Calculate the unit price of the hinges.
$\frac{\$288.60}{15} = \$19.24/hinge$

Each hinge cost $19.24.

PTS: 1 DIF: Easy REF: 1.2 OBJ: Number
LOC: N-SO1 TOP: Unit Price

5. ANS:
Calculate the total cost of the hotel.
90.00 euros/night x 7 nights = 630.00 euros

The bank is selling the euros to Victor, so use the bank selling rate.
630.00 x 1.64876 = $1038.72 CAD

The hotel will cost Victor $1038.72 CAD.

PTS: 1 DIF: Moderate REF: 1.5 OBJ: Number
LOC: N-SO1 TOP: Currency Exchange Rates KEY: Buying Rate | Selling Rate

PROBLEM

1. ANS: Find the ratio of height to length.

   height:length = 2:20

   Divide each part of the ratio by the largest common factor.
   height:length = (2/2):(20/2)
   height:length = 1:10

   The ramp is safe.

   PTS: 1 DIF: Moderate REF: 1.1 OBJ: Number
   LOC: N-SO1 TOP: Proportional Reasoning KEY: Ratio

2. ANS:
   Find how much green paint is produced from the ratio given.
   parts green paint = parts yellow paint + parts blue paint
   parts green paint = 5 + 7
   parts green paint = 12

   Set up a proportion to solve for x, the amount of yellow paint needed.

$$\frac{5 \text{ parts yellow paint}}{12 \text{ part green paint}} = \frac{\text{yellow paint needed}}{4 \text{ L green paint needed}}$$

$$\frac{5}{12} = \frac{x}{4}$$

$$4 \times \frac{5}{12} = \frac{x}{4} \times 4$$

$$1.7 = x$$

   The painter needs 1.7 L of yellow paint.

   Calculate how much blue paint is needed.
   blue paint needed = green paint needed – yellow paint needed
   blue paint needed = 4 – 1.7
   blue paint needed = 2.3 L

   The painter needs 2.3 L of blue paint.

   Alternative Solution
   The proportion could be set up to solve for the amount of blue paint needed.

$$\frac{7 \text{ parts blue paint}}{12 \text{ part green paint}} = \frac{\text{blue paint needed}}{4 \text{ L green paint needed}}$$

$$\frac{7}{12} = \frac{x}{4}$$

$$4 \times \frac{b}{12} = \frac{x}{4} \times 4$$

$$2.3 = x$$

   yellow paint needed = green paint needed – blue paint needed
   yellow paint needed = 4 – 2.3
   yellow paint needed = 1.7 L

   The painter needs 2.3 L of blue paint and 1.7 L of yellow paint.

PTS: 1 DIF: Difficult REF: 1.1 OBJ: Number
LOC: N-SO1 TOP: Proportional Reasoning KEY: Ratio

3. ANS:
Calculate the cost of 1 piece of 8-foot lumber.

$$\frac{\text{price of 8 pieces}}{\text{8 pieces}} = \frac{\text{price of 1 piece}}{\text{1 price}}$$

$$\frac{\$84.00}{8} = \frac{x}{1}$$

$$\$14.00 = x$$

One piece of 8-foot lumber costs $14.00.

Calculate the cost of 1 foot of lumber.
$14.00 ÷ 8 = $1.75

Multiply to calculate the cost of 240 feet of lumber.
$1.75 x 240 = $420.00

The cost to purchase 240 feet of lumber is $420.00.

PTS: 1 DIF: Moderate REF: 1.1 OBJ: Number
LOC: N-SO1 TOP: Proportional Reasoning KEY: Rate

4. ANS:
a) Calculate the cost of siding without the discount.
$\$13.75/m^2 \times 210\ m^2 = \$2887.50$

Calculate how much Juliet will charge in wages.
$21.00/hour x 41 hours = $861.00

Total cost = $2887.50 + $861.00
Total cost = $3748.50

She will charge $3748.50 if she does not give the discount to her customer.

b) Calculate the discounted price on the siding.
$2887.50 x (1 – 0.15) = $2454.38

Total cost = $2454.38 + $861.00
Total cost = $3315.38

She will charge $3315.38 if she does give the discount to her customer.

c) $3748.50 – $3315.38 = $433.12

The customer will save $433.12 if Juliet gives the discount.

d) Answers may vary. She may give the discount anyway because she is trying to offer a lower price than her competitors or she is trying to build a good relationship with the customer so that he/she will hire Juliet again.

PTS: 1 DIF: Difficult REF: 1.4 OBJ: Number
LOC: N-SO1 TOP: On Sale!

5. ANS:
Use the bank buying rate.

Zloty:	1500 zloty x 0.3234 = $485.10
Kroon:	844 kroon x 0.079 54 = $67.13
USD:	496 USD x 1.1210 = $556.02

$485.10 + $67.13 + $556.02 = $1108.25

You have a total of $1108.25.

PTS: 1	DIF: Moderate REF: 1.5	OBJ: Number
LOC: N-SO1	TOP: Currency Exchange Rates	KEY: Buying Rate | Selling Rate

Grade 10 Review 2

Multiple Choice

Identify the choice that best completes the statement or answers the question.

1. Julia receives an annual salary of $32500.00. What is her average weekly income?

   a. $625.00
   b. $1250.00
   c. $650.00
   d. $677.08

___ 2. Katarina earns $14.60/hour for regular hours of work. She is paid time and a half for overtime work. What is her overtime rate of pay?

   a. $9.73
   b. $18.25
   c. $25.55
   d. $21.90

___ 3. Jonathan earns $17.89/hour for regular hours of work. He is paid time and a half for overtime work. What is his overtime rate of pay?

   a. $22.36
   b. $26.84
   c. $31.31
   d. $11.93

___ 4. Victor works as an office assistant for a large paper manufacturing company. He earns a salary of $29250.00/year. How much more will he receive per paycheque if he chooses to be paid semi-monthly instead of biweekly?

   a. $93.75
   b. $84.38
   c. $103.13
   d. $187.50

___ 5. Luis works as a journeyman carpenter. His hours for one week are listed in the table below. If he works more than 35 hours in a week, he is paid time and a half for every additional hour. His regular pay is paid $16.30/hour. Calculate his earnings for the week.

Time card: Luis			
Day	**Start Time**	**End Time**	**Hours Worked**
Monday	6:00	17:00	
Tuesday	7:45	17:00	
Wednesday	7:00	17:45	
Thursday	7:00	17:45	
Friday	6:30	15:15	
Saturday	6:30	14:30	
Sunday			

   a. $1259.58
   b. $1430.33
   c. $1145.08
   d. $1030.57

___ 6. Claude is a brick layer. He is paid $9.00 for every full pallet of bricks that he lays in a day. He does not receive payment for any parts of pallets. A single pallet holds 20 bricks. If Claude lays 230 bricks in one day, how much will he earn?

   a. $129.00
   b. $99.00
   c. $9.00
   d. $104.00

___ 7. Hugo assembles motherboards for a computer manufacturer. He is paid $7.00/board he completes. If he completes 17 boards a day for 3 days, how much does he earn that week?

   a. $119.00
   b. $285.60
   c. $357.00
   d. $464.10

____ 8. Katie works as a server at an Italian Bistro working 4 days per week for 6 hours each day. She is paid $10.60/hour. Her sales average about $140.00 each day. If her customers all tip 20%, what will her weekly earnings be?

a. $282.40
b. $254.40
c. $476.32
d. $366.40

____ 9. Franco works at an isolated research station in Nunavut for 6 months of the year, for which he earns isolation pay. His annual salary is $41125.00. If he earned $48750.00 in one year, how much was his isolation pay?

a. $45750.00
b. $7625.00
c. $1270.83
d. $9150.00

____ 10. Jessica waits tables as a part-time job and earns $9.80/hour. She works 4 shifts of 6 hours each in a week. On average, her total sales were $705.00 per night. If all her customers left a 17% tip, how much did she earn that week?

a. $571.68
b. $714.60
c. $857.52
d. $893.25

____ 11. Lysanne works for a shipping company. At the end of every year, employees receive a performance evaluation. Lysanne receives a bonus of 4.1% on her salary if she has a satisfactory evaluation. If Lysanne earns a salary of $38250.00/year, how much will she earn in one year including her bonus, assuming she is given a good evaluation?

a. $1568.25
b. $47781.90
c. $36681.75
d. $39818.25

____ 12. Leonard works at a paper mill. He earns a salary of $48975.00/year. At the end of every year, employees receive a performance evaluation. Leonard receives a bonus of $2056.95 after his evaluation for excellent job performance. What percentage of Leonard's salary was his bonus?

a. 5.2%
b. 4.7%
c. 2.1%
d. 4.2%

____ 13. What is Hank's net pay if he has a gross income of $1520.00/month, lives in Regina, SK, qualifies for claim code 2 and has deductions of $75.24 for CPP, $26.30 for EI, $21.28 for provincial tax, and $51.68 for federal tax?

a. $1480.05
b. $1076.40
c. $1614.60
d. $1345.50

____ 14. Bayani has a gross biweekly income of $1100.00. His net biweekly income is $847.35. What percentage of his gross income goes to deductions?

a. 23%
b. 30%
c. 77%
d. 15%

____ 15. Ines has a biweekly gross income of $2103.12. Her before-tax deductions include a short-term disability premium of 0.6%, union dues of 2.5%, and a pension deduction of 3.5%. What is her taxable income?

a. $1867.59
b. $1964.31
c. $1899.03
d. $2003.45

hort Answer

1. Phillip works as a carpenter. He earns $26.84/hour. His current project took 52 hours to complete. He needed to spend $600.00 in supplies to complete the project, which he pays for himself.

   How much did he earn for the job?

2. Use Kristahl's time card to calculate how many hours she worked this week.

Time card: Kristahl			
Day	**In**	**Out**	**Hours**
Monday	8:15	6:00	
Tuesday	7:00	4:30	
Wednesday	9:15	3:00	
Thursday	8:45	4:15	
Friday	10:00	6:15	

3. What is Sandra's rate of commission if she earns $633.79 on $2697.00 worth of sales?

4. Krystof earns $15.55/h for regular hours of work, time and a half overtime, and a shift premium of $2.25 for split shifts. His regular work week is 40 hours. If he works a total of 45 hours and works 6 split shifts, how much does he earn for the week?

5. Name one thing your provincial or territorial tax deduction helps pay for.

roblem

1. Valerie works for a catering company. She earns $15.60/hour. If Valerie works more than 35 hours in one week, she earns time and a half.

   a) Calculate the number of hours Valerie worked.

   b) What is Valerie's hourly overtime wage?

   c) Calculate her earnings for the week.

Time card: Valerie			
Day	**In**	**Out**	**Hours**
Monday	8:45	5:00	
Tuesday	8:00	4:30	
Wednesday	7:30	3:00	
Thursday	9:15	3:15	
Friday	8:00	5:15	

2. Using the pay statement below, determine how many hours Penelope works each day. Assume she works a 5-day work week, and works the same number of hours each day.

Employee Name: Penelope Mendez	
Company: GH Medical	**Pay Begin Date: 10/10/2010**
	Pay End Date: 10/16/2010

General	
Employee ID: 123412	Job Title: Registered Nurse
Address:	Pay Rate: $33.00
	Annual: -

Hours and Earnings			
Description	**Rate**	**Hours**	**Gross Earnings**
Regular	$33.00		**$1386.00**

3. Nina is a window washer. She charges $2.25/window to wash windows on the first floor and an additional $0.05 per window per floor above the first floor.

   If Nina is hired to wash the windows of a 5-floor building and each floor has 25 windows on it, how much will she charge?

4. Lance is a travelling salesman. He is reimbursed for his driving at $0.41/km drives and receives a 35% commission on all his sales. If he drives 2012 km in one month and sells $6200.00 worth of merchandise, how much will he be paid?

5. The sales at a restaurant totalled $10200.00 in one week. The customers left an average tip of 16%.

   a) If there are 4 servers working that week and each receives an equal share of the tips, what will each server's share be?

   b) If the servers give the kitchen staff 25% of the tips, how much will each server receive?

rade 10 Review 2
nswer Section

TIPLE CHOICE

1. ANS: A PTS: 1 DIF: Easy REF: 2.1
   OBJ: Number LOC: N-SO2 TOP: Wages and Salaries
   KEY: Salary
2. ANS: D PTS: 1 DIF: Easy REF: 2.1
   OBJ: Number LOC: N-SO2 TOP: Wages and Salaries
   KEY: Hourly Wage | Overtime
3. ANS: B PTS: 1 DIF: Easy REF: 2.1
   OBJ: Number LOC: N-SO2 TOP: Wages and Salaries
   KEY: Hourly Wage | Overtime
4. ANS: A PTS: 1 DIF: Moderate REF: 2.1
   OBJ: Number LOC: N-SO2 TOP: Wages and Salaries
   KEY: Salary
5. ANS: C PTS: 1 DIF: Difficult REF: 2.1
   OBJ: Number LOC: N-SO2 TOP: Wages and Salaries
   KEY: Hourly Wage | Overtime
6. ANS: B PTS: 1 DIF: Moderate REF: 2.2
   OBJ: Number LOC: N-SO2 TOP: Alternative Ways to Earn Money
   KEY: Piecework
7. ANS: C PTS: 1 DIF: Easy REF: 2.2
   OBJ: Number LOC: N-SO2 TOP: Alternative Ways to Earn Money
   KEY: Piecework
8. ANS: D PTS: 1 DIF: Moderate REF: 2.3
   OBJ: Number LOC: N-SO2 TOP: Additional Earnings
   KEY: Tips
9. ANS: B PTS: 1 DIF: Easy REF: 2.3
   OBJ: Number LOC: N-SO2 TOP: Additional Earnings
   KEY: Isolation Pay
10. ANS: B PTS: 1 DIF: Moderate REF: 2.3
    OBJ: Number LOC: N-SO2 TOP: Additional Earnings
    KEY: Tips
11. ANS: D PTS: 1 DIF: Easy REF: 2.3
    OBJ: Number LOC: N-SO2 TOP: Additional Earnings
    KEY: Bonus
12. ANS: D PTS: 1 DIF: Easy REF: 2.3
    OBJ: Number LOC: N-SO2 TOP: Additional Earnings
    KEY: Bonus
13. ANS: D PTS: 1 DIF: Easy REF: 2.4
    OBJ: Number LOC: N-SO2 TOP: Deductions and Net Pay
    KEY: Net Pay
14. ANS: A PTS: 1 DIF: Easy REF: 2.4
    OBJ: Number LOC: N-SO2 TOP: Deductions and Net Pay
    KEY: Deductions
15. ANS: B PTS: 1 DIF: Easy REF: 2.4
    OBJ: Number LOC: N-SO2 TOP: Deductions and Net Pay
    KEY: Taxable Income

SHORT ANSWER

1. ANS:
   Calculate Phillip's total income for the project, minus his expenses.

   $\$26.84 \times 52 - \$600.00 = \$795.68$

   Phillip earned $795.68 for the project.

   PTS: 1 DIF: Easy REF: 2.1 OBJ: Number
   LOC: N-SO2 TOP: Wages and Salaries KEY: Hourly Wage

2. ANS:

Time card: Kristahl			
Day	**In**	**Out**	**Hours**
Monday	8:15	6:00	9.75
Tuesday	7:00	4:30	9.50
Wednesday	9:15	3:00	5.75
Thursday	8:45	4:15	7.50
Friday	10:00	6:15	8.25
			Total: 40.75

   Kristahl worked 40.75 hours this week.

   PTS: 1 DIF: Difficult REF: 2.1 OBJ: Number
   LOC: N-SO2 TOP: Wages and Salaries

3. ANS:
   Divide Sandra's commission by her sales and convert to a percentage.
   $\$633.79 \div \$2697.00 = 0.235$

   $0.235 \times 100 = 23.5$

   Sandra's rate of commission is 23.5%.

   PTS: 1 DIF: Easy REF: 2.2 OBJ: Number
   LOC: N-SO2 TOP: Alternative Ways to Earn Money KEY: Commission

4. ANS:
   Calculate his hourly overtime pay.
   $1.5 \times \$15.55 = \$23.33$

   Calculate his total pay.
   total pay = regular pay + overtime pay + shift bonus pay
   total pay = 40($15.55) + 5($23.33) + 6($2.25)
   total pay = $622.00 + $116.63 + $13.50
   total pay = $752.12

   Krystof earns $752.12 for the week.

   PTS: 1 DIF: Moderate REF: 2.3 OBJ: Number
   LOC: N-SO2 TOP: Additional Earnings KEY: Shift Premium

5. ANS:
   Your provincial or territorial tax deductions help pay for expenses including:
   • hospitals and medical care;
   • road work; and
   • teachers', politicians', and nurse's salaries.

   PTS: 1 DIF: Moderate REF: 2.4 OBJ: Number
   LOC: N-SO2 TOP: Deductions and Net Pay KEY: Tax

ROBLEM

1. ANS:
   a) Complete the Hours column of the table.

Time card: Valerie			
Day	**In**	**Out**	**Hours**
Monday	8:45	5:00	8.25
Tuesday	8:00	4:30	8.50
Wednesday	7:30	3:00	7.50
Thursday	9:15	3:15	6.00
Friday	8:00	5:15	9.25
			Total: 39.50

Valerie worked 39.50 hours.

b) Calculate Valerie's wage at time and a half.

$1.5 \times \$15.60 = \$23.40$

Her overtime pay is $23.40/hour.

c) Calculate her earnings for her regular hours of work.

$35 \times \$15.60 = \$546.00$

Calculate her earnings for overtime work.
$(39.50 - 35) \times \$23.40 = \$105.30$

$\$546.00 + \$105.30 = \$651.30$

Valerie earned $651.30 this week.

PTS: 1 DIF: Difficult REF: 2.1 OBJ: Number
LOC: N-SO2 TOP: Wages and Salaries KEY: Hourly Wage | Overtime

2. ANS:
Divide Penelope's gross earnings by the number of days she works, and by her pay per day.

$\$1386.00 \div \$33.00 = 42$ hours

Penelope works 42 hours per week.

Divide her hours of work per week by the number of days she works.
$42 \div 5 = 8.4$ h

Penelope works 8.4 hours per day.

PTS: 1 DIF: Moderate REF: 2.1 OBJ: Number
LOC: N-SO2 TOP: Wages and Salaries

3. ANS:
Nina will charge $2.25/window for the 25 windows on the first floor.

Calculate how much she charges for windows above the first floor.
$2.25 + $0.05 = $2.30 for the 2nd floor

$2.30 + $0.05 = $2.35 for the 3rd floor

$2.35 + $0.05 = $2.40 for the 4th floor

$2.40 + $0.05 = $2.45 for the 5th floor

There are 25 windows per floor.

Calculate how much Nina will charge in total.
25($2.25 + $2.30 + $2.35 + $2.40 + $2.45) = $293.75

Nina will charge $293.75.

PTS: 1 DIF: Difficult REF: 2.3 OBJ: Number
LOC: N-SO2 TOP: Additional Earnings KEY: Piecework

4. ANS:
Calculate how much he will be reimbursed for his driving.
$0.41 x 2012 = $824.92

Calculate his commission.
0.35 x $6200.00 = $2170.00

Add to calculate his total payment.
$824.92 + $2170.00 = $2994.92

Lance will be paid $2994.92.

PTS: 1 DIF: Easy REF: 2.3 OBJ: Number
LOC: N-SO2 TOP: Additional Earnings KEY: Commission

5. ANS:
a) Convert the tipping rate to a percentage and calculate the total tips collected by the restaurant.
0.16 x $10200.00 = $1632.00

The restaurant collected $1632.00 in tips. These were divided equally between 4 servers.
$1632.00 ÷ 4 = $408.00

Each server gets $408.00 in tips.

b) Each server will receive 75% of the tips calculated in part a) (100% minus 25% to the kitchen staff).
$408.00 x 0.75 = $306.00

Each server will make $306.00 in tips if they share with the kitchen staff.

PTS: 1 DIF: Moderate REF: 2.3 OBJ: Number
LOC: N-SO2 TOP: Additional Earnings KEY: Tips

Grade 10 Review 3

Multiple Choice

Identify the choice that best completes the statement or answers the question.

___ 1. What is the perimeter of a rectangular room that has a length of 5.1 m and a width that is 2 m less than the length?

a. 24.4 m
b. 15.4 m
c. 16.4 m
d. 20.4 m

___ 2. How many inches is 9'10"?

a. 116"
b. 118"
c. 129"
d. 228"

___ 3. How many yards is 9 mi?

a. 14 500 yards
b. 15 840 yards
c. 16 040 yards
d. 12 672 yards

___ 4. Convert 106 inches into feet and inches.

a. 11 feet 5 inches
b. 8 feet 10 inches
c. 7 feet 7 inches
d. 9 feet 10 inches

___ 5. Convert 64 041 inches into miles. Round to 1 decimal place.

a. 1.2 miles
b. 0.8 miles
c. 1.0 miles
d. 3.0 miles

___ 6. What is the circumference of a circular hot tub if its radius is 1.35 m?

a. 5.72 m
b. 8.48 m
c. 12.03 m
d. 4.24 m

___ 7. What is the diameter of a circular window with a circumference of 1.35 m?

a. 0.21 m
b. 0.86 m
c. 0.04 m
d. 0.43 m

___ 8. Which of the following is a good estimate of an inch?

a. The length from your elbow to your wrist.
b. The span of your hand.
c. The width of your thumb.
d. The width of your pinky finger.

___ 9. Which of the following are the most appropriate imperial units to use to measure the width of a textbook?

a. centimetres
b. millimetres
c. feet
d. inches

___ 10. Surface area is measured in which type of units?

a. zero units
b. square units
c. linear units
d. cube units

___ 11. What is the surface area of a cube that measures 16" on each side?

a. 2048 in^2
b. 1536 in^2
c. 1024 in^2
d. 256 in^2

___ 12. An aluminum pop can measures 11 cm high and has a radius of 3 cm. What is the surface area of the exposed can, to 2 decimal places?

a. 28.27 cm
b. 367.57 cm
c. 263.89 cm
d. 226.19 cm

___ 13. Which of these shapes has the largest surface area?

- a cylinder with a height of $4\frac{1}{2}$ inches and a radius of $4\frac{1}{4}$ inches; or
- a rectangular prism with a length of 5 inches, a width of $4\frac{1}{2}$ inches, and a height of 4 inches; or
- a cone with a slanted side of $6\frac{1}{4}$ inches and a radius of $4\frac{1}{4}$ inches; or
- a square-based pyramid with a base length of $9\frac{1}{4}$ inches and a slant length of $5\frac{3}{4}$ inches.

a. cylinder
b. rectangular prism
c. cone
d. square-based pyramid

___ 14. Volume is measured in which type of units?

a. linear units
b. square units
c. cube units
d. zero units

___ 15. What is the volume of a cube that measures 23" on each side?

a. 12 167 cu in
b. 4232 cu in
c. 529 cu in
d. 2116 cu in

Short Answer

1. You want to build a fence around your front yard. The yard measures 95 yards long and 50 yards wide. Your house, which is 20 yards wide, runs along the width edge of the fence. You will not need any fencing along the width of the house. How much fencing do you need?

2. Minh is cutting lengths of wood to finish a project. He needs 3 pieces: one measuring $5\frac{1}{4}'$, one measuring $1\frac{1}{32}'$, and one measuring $1\frac{1}{8}'$. Each time he cuts the wood, he loses $1\frac{1}{4}"$. How much wood does he need to buy for the project? He can only purchase the lumber in full feet.

3. The circumference of a circular fountain is 30 inches.

   a) What is the circumference in centimetres, to one decimal place?

   b) What is the radius of the fountain in centimetres, to one decimal place?

4. Horatio is wallpapering his room. His room measure 5 m long by 4.75 m wide by 3.25 m high. There are two windows that measure 1 m by 0.75 m and a door that is 1.3 m by 2.75 m, each of which do not require wallpaper. How much wallpaper is needed for Horatio's room?

5. A fish tank measures 5 ft by 39 in by 27 in. For the best health of the fish, the tank should only be 75% full. What volume of water should the tank hold, in cubic feet?

lem

1. While running, Lucy counts that she has made 24 820 strides. She estimates that each of her strides is 31 inches long.

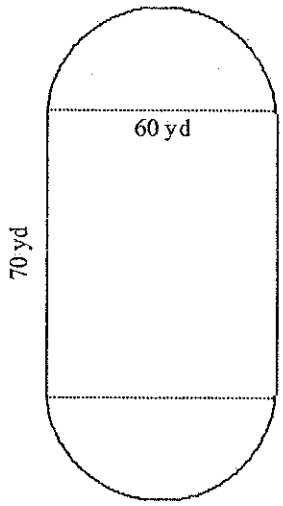
   a) How many inches has Lucy run?

   b) How many feet has Lucy run?

   c) How many yards has Lucy run?

   d) How many miles has Lucy run? Round to the nearest mile.

2. How many laps of this track must Kabir complete in order to run 2.5 miles?



3. Allanah can kick a rugby ball 72 feet. Cory is standing 27 metres away. Will the ball reach Cory?

4. A garden measures 6 m by 5 m. It is surrounded on all sides by a stone pathway that is 1.5 m wide.

   a) What is the area of the pathway?

   b) The cost of building the pathway is $\$7.99/m^2$. What will it cost to build the pathway?

5. The gas tank of Rory's car can hold 55 litres of gas.

   a) Rory is travelling in Colorado, USA, and needs to fill up his tank. The cost of gas is \$3.19/gallon. How much will it cost him to fill up, assuming the tank is completely empty?

   b) If Rory took the same car to England, where gas costs \$8.06/gal, how much would it cost him to fill up the tank?

Grade 10 Review 3
Answer Section

MULTIPLE CHOICE

1. ANS: C PTS: 1
   OBJ: Measurement
   KEY: Perimeter
   DIF: Moderate REF: 3.1
   LOC: M-SO3 TOP: Systems of Measurement

2. ANS: B PTS: 1
   OBJ: Measurement
   KEY: Converting between imperial units
   DIF: Easy REF: 3.1
   LOC: M-SO2 TOP: Systems of Measurement

3. ANS: B PTS: 1
   OBJ: Measurement
   KEY: Converting between imperial units
   DIF: Easy REF: 3.1
   LOC: M-SO2 TOP: Systems of Measurement

4. ANS: B PTS: 1
   OBJ: Measurement
   KEY: Converting between imperial units
   DIF: Moderate REF: 3.1
   LOC: M-SO2 TOP: Systems of Measurement

5. ANS: C PTS: 1
   OBJ: Measurement
   KEY: Converting between imperial units
   DIF: Easy REF: 3.1
   LOC: M-SO2 TOP: Systems of Measurement

6. ANS: B PTS: 1
   OBJ: Measurement
   KEY: Circumference
   DIF: Easy REF: 3.1
   LOC: M-SO3 TOP: Systems of Measurement

7. ANS: D PTS: 1
   OBJ: Measurement
   KEY: Circumference
   DIF: Easy REF: 3.1
   LOC: M-SO3 TOP: Systems of Measurement

8. ANS: C PTS: 1
   OBJ: Measurement
   KEY: Imperial units
   DIF: Easy REF: 3.2
   LOC: M-SO3 TOP: Converting Measurements

9. ANS: D PTS: 1
   OBJ: Measurement
   KEY: Imperial units
   DIF: Easy REF: 3.2
   LOC: M-SO3 TOP: Converting Measurements

10. ANS: B PTS: 1
    OBJ: Measurement
    TOP: Surface Area
    DIF: Easy REF: 3.3
    LOC: M-SO1 | M-SO2
    KEY: Surface Area

11. ANS: B PTS: 1
    OBJ: Measurement | Algebra
    TOP: Surface Area
    DIF: Easy REF: 3.3
    LOC: M-SO4 | A-SO1
    KEY: Surface Area

12. ANS: C PTS: 1
    OBJ: Measurement | Algebra
    TOP: Surface Area
    DIF: Easy REF: 3.3
    LOC: M-SO4 | A-SO1
    KEY: Surface Area

13. ANS: A PTS: 1
    OBJ: Measurement | Algebra
    TOP: Surface Area
    DIF: Moderate REF: 3.3
    LOC: M-SO4 | A-SO1
    KEY: Surface Area

14. ANS: C PTS: 1
    OBJ: Measurement
    TOP: Volume KEY: Volume
    DIF: Easy REF: 3.4
    LOC: M-SO1 | M-SO2

15. ANS: A PTS: 1
    OBJ: Measurement
    KEY: Volume
    DIF: Easy REF: 3.4
    LOC: M-SO2 TOP: Volume

HORT ANSWER

1. ANS:
   Calculate the perimeter of the yard.
   $2 \times (95 + 50) = 290$

   The perimeter is 290 yards.

   You must subtract the length of the house to find how much fencing you need.
   $290 - 20 = 270$

   You will need 270 yards of fencing.

   PTS: 1 DIF: Easy REF: 3.1 OBJ: Measurement
   LOC: M-SO3 TOP: Systems of Measurement KEY: Perimeter

2. ANS:
   Calculate the total length of lumber Minh needs to finish his project.
   $5\frac{1}{4} + 1\frac{1}{32} + 1\frac{1}{8} = 7\frac{13}{32}$

   He needs $7\frac{13}{32}'$ of lumber.

   He will need to cut the length of lumber twice. Calculate how much additional lumber he will need for the cuts.
   $2 \times 1\frac{1}{4}" = 2.5"$

   Minh will lose 2.5" of lumber in cutting.

   Add to find the total length of lumber needed.
   $7\frac{13}{32}' + 2.5" = 7.6'$

   Minh can only buy lumber in full feet, so he will need to buy 8 feet when rounded up.

   PTS: 1 DIF: Difficult REF: 3.1 OBJ: Measurement
   LOC: M-SO3 TOP: Systems of Measurement
   KEY: Converting between imperial measurements

3. ANS:
   a) Convert the circumference from inches to centimetres.
      1 in = 2.54 cm

      $30 \text{ in} \times 2.54 \text{ cm/in} = 76.2 \text{ cm}$

      The circumference of the fountain is 76.2 cm.

b) Use the formula for the circumference of a circle to calculate the radius.

$$C = 2\pi r$$

$$76.2 = 2\pi r$$

$$\frac{76.2}{2\pi} = \frac{2\pi r}{2\pi}$$

$$\frac{76.2}{2\pi} = r$$

$$12.1 = r$$

The radius of the fountain is 12.1 cm.

PTS: 1 DIF: Difficult REF: 3.2 OBJ: Measurement
LOC: M-SO3 | M-SO2 TOP: Converting Measurements
KEY: Converting from imperial to SI units | Circumference

4. ANS: Calculate the surface area of the walls, ignoring the windows.

There are 2 walls that are 5 m long by 3.25 m high.

$A_1 = 2(l \times h)$

$A_1 = 2(5 \times 3.25)$

$A_1 = 32.5\ \text{m}^2$

There are 2 walls that are 4.75 m wide by 3.25 m high.

$A_2 = 2(w \times h)$

$A_2 = 2(4.75 \times 3.25)$

$A_2 = 30.875\ \text{m}^2$

Calculate the area that will not be wallpapered.

$A_{door} = lw$

$A_{door} = 1.3 \times 2.75$

$A_{door} = 3.575\ \text{m}^2$

There are 2 windows that are 1 m by 0.75 m.

$A_{window} = 2(l \times w)$

$A_{window} = 2(1 \times 0.75)$

$A_{window} = 1.5\ \text{m}^2$

Calculate the total area to be wallpapered.

$A_{total} = A_1 + A_2 - A_{door} - A_{window}$

$A_{total} = 32.5 + 30.875 - 3.575 - 1.5$

$A_{total} = 58.3\ \text{m}^2$

The total area to be wallpapered is 58.3 m^2.

PTS: 1 DIF: Moderate REF: 3.3 OBJ: Measurement | Algebra
LOC: M-SO4 | M-SO1 TOP: Surface Area KEY: Surface Area

5. ANS:
Convert the dimensions of the tank to feet.

Width: 39 in ÷ 12 in/ft = 3.25 ft

Height: 27 in ÷ 12 in/ft = 2.25 ft

Calculate the total volume of the tank.
$V = lwh$

$V = 5 \times 3.25 \times 2.25$

$V = 36.5625$ cu ft

Calculate 75% of the tank's volume.
$0.75 \times 36.5625 = 27.421875$ cu ft

The tank should be filled with 27.421875 cu ft of water.

PTS: 1 DIF: Moderate REF: 3.4 OBJ: Measurement
LOC: M-SO2 | M-SO3 TOP: Volume KEY: Volume

ROBLEM

1. ANS:
   a) Multiply the number of strides by the length of each stride.
   24 820 x 31 = 769 420 inches

   Lucy has run 769 420 inches.

   b) Divide the distance Lucy has run in inches by 12 (the number of inches per foot).
   769 420 ÷ 12 = 64 118 feet

   Lucy has run 64 118 feet.

   c) Divide the distance Lucy has run in feet by 3 (the number of feet per yard).
   64 118 ÷ 3 = 21 373 yards

   Lucy has run 21 373 yards.

   d) Divide the distance Lucy has run in yards by 1760 (the number of yards per mile).
   21 373 ÷ 1760 = 12 miles

   Lucy has run 12 miles.

PTS: 1 DIF: Easy REF: 3.1 OBJ: Measurement
LOC: M-SO2 TOP: Systems of Measurement
KEY: Converting between imperial measurements

2. ANS:
The perimeter of the track is equal to the circumference of a circle with a diameter of 60 plus 2 times the side length of 70.

$P = 2(\text{side length}) + \pi d$

$P = 2(70) + \pi(60)$

$P \approx 328 \text{ yd}$

Convert the number of miles Kabir wants to run into yards.
2.5 miles × 1760 yards per mile = 4400 yards

Divide the distance Kabir wants to run by the perimeter of the track.
4400 yards ÷ 328 yards per lap = 13.4 laps

Kabir will need to run 13.4 laps.

PTS: 1 DIF: Difficult REF: 3.1 OBJ: Measurement
LOC: M-SO3 TOP: Systems of Measurement
KEY: Perimeter | Converting between imperial measurements

3. ANS:
Convert the distance in feet to metres.
1 ft = 0.3048 m

72 ft × 0.3048 m/ft = 21.95 m

The ball will not reach Cory.

PTS: 1 DIF: Moderate REF: 3.2 OBJ: Measurement
LOC: M-SO2 TOP: Converting Measurements
KEY: Converting from imperial to SI units

4. ANS:
a) Cut the pathway into 8 pieces:
- 4 square corners that measure 1.5 m by 1.5 m;
- 2 end pieces that measure 6 m by 1.5 m; and
- 2 side pieces that measure 5 m by 1.5 m.

Find their areas.

$A_{corners} = 4lw$

$A_{corners} = 4 \times 1.5 \times 1.5$

$A_{corners} = 9 \text{ m}^2$

$A_{ends} = 2lw$

$A_{ends} = 2 \times 6 \times 1.5$

$A_{ends} = 18 \text{ m}^2$

$A_{sides} = 2lw$

$A_{sides} = 2 \times 5 \times 1.5$

$A_{sides} = 15 \text{ m}^2$

Calculate the total area of the pathway.

$A = A_{corners} + A_{ends} + A_{sides}$

$A = 9 + 18 + 15$

$A = 42\ m^2$

The total area of the pathway is 42 m^2.

b) Cost = price per m^2 x area

Cost = \$7.99/m^2 x 42 m^2

Cost = \$335.58

It will cost \$335.58 to build the pathway.

PTS: 1 DIF: Moderate REF: 3.3 OBJ: Measurement | Algebra
LOC: M-SO4 | A-SO1 TOP: Surface Area
KEY: Surface Area

5. ANS:

a) Convert the tank's capacity to US gallons.

1 US gal ≈ 3.8 L

$$1\ L \approx \frac{1}{3.8}\ US\ gal$$

$$55\ L = 55 \times \frac{1}{3.8}$$

55 L = 14.5 US gal

The gas tank will hold 14.5 US gallons.

Calculate the cost of filling the tank.

14.5 US gal x \$3.19/US gal = \$46.26

It will cost Rory \$46.26 to fill his car's gas tank.

b) Calculate the gas tank's capacity in British gallons.

1 British gal ≈ 4.5 L

$$1\ L \approx \frac{1}{4.5}\ British\ gal$$

$$55\ L \approx 55 \times \frac{1}{4.5}$$

55 L ≈ 12.2 British gal

The gas tank will hold 12.2 British gallons.

Calculate the cost of filling the tank.

12.2 British gal x \$8.06/US gal = \$98.51

It will cost Rory \$98.51 to fill his car's gas tank in England.

PTS: 1 DIF: Moderate REF: 3.4 OBJ: Measurement | Number
LOC: M-SO1 | N-SO1 TOP: Volume
KEY: Converting from SI to imperial units

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. The temperature of a windshield on a winter morning is 10°F. If the melting point is 0°C, how many degrees must the temperature of the windshield be raised before the ice can melt?

a. 26°F
b. 17°F
c. 32°F
d. 22°F

____ 2. The melting point of iron is 1536°C. At what temperature in degrees Fahrenheit will iron melt?

a. 835°F
b. 2732°F
c. 2822°F
d. 2797°F

____ 3. A pot of water is being boiled at high altitude and has reached a temperature of 217°F. If the boiling point of water at this altitude is 105°C, by how many more degrees must the water heat up?

a. 10°F
b. 7°F
c. None. It is already boiling.
d. 4°F

____ 4. Farmers must monitor their cattle for signs of infection or disease. A cow's healthy body temperature is 102.5°F. What is its body temperature in degrees Celsius?

a. 41.2°C
b. 39.2°C
c. 43°C
d. 37.2°C

____ 5. A walk-in freezer at a restaurant is kept at a temperature of 19°F. What is this temperature in degrees Celsius?

a. –5.2°C
b. –12.2°C
c. 3.8°C
d. –7.2°C

____ 6. Sarah bought 2 pounds 10 ounces of strawberries and 3 pound 2 ounces of blackberries. What is the combined weight of the berries?

a. 4 lb 13 oz
b. 12 lb 5 oz
c. 8 lb 12 oz
d. 5 lb 12 oz

____ 7. Sylvia spent $22.18 on birdseed being sold for $0.91/lb. How much birdseed did she buy?

a. 25 lb 6 oz
b. 24 lb 6 oz
c. 20 lb 4 oz
d. 24 lb 7 oz

____ 8. What is the weight of a 300-lb object, in ounces and in tons?

a. 4800 oz, 0.2 tons
b. 1800 oz, 0.2 tons
c. 1800 oz, 0.3 tons
d. 8400 oz, 0.1 tons

____ 9. A contractor poured 2.8 tn of concrete in the foundations of 6 houses. How much concrete would be needed to build the foundations of another 2 houses?

a. 1493 lb
b. 1867 lb
c. 2240 lb
d. 1960 lb

___ 10. A flight attendant loading meals and drinks onto an airplane moves 20, 10-kg boxes of prepared meals and 8 trays containing 24 drink containers, each with a mass of 200 g. What is the total mass of food and drink loaded?

a. 5000 kg
b. 1800 kg
c. 238.4 kg
d. 38 600 kg

___ 11. Three-bean salad is sold for $1.16/100 g at the deli. What would be the price for a large, 0.9-kg container of salad?

a. $20.88
b. $5.22
c. $11.78
d. $10.44

___ 12. What is the price of 600 g of walnuts if they are being sold for $17.77/kg?

a. $10.66
b. $8.67
c. $9.32
d. $10.19

___ 13. Conrad is making veggie burgers for 18 children with special dietary needs at summer camp. The burgers should be 50 g each. How many pounds of veggie burger mix should he defrost?

a. 3.78 lbs
b. 2.88 lbs
c. 1.98 lbs
d. 1.08 lbs

___ 14. At the bank, penny rolls are weighed to determine the amount of money they contain. If 1 penny weighs 2.35 g, how much money is in a pile of rolls weighing 5.55 kg?

a. $25.97
b. $29.04
c. $18.42
d. $23.61

___ 15. Chandra is buying firewood for the winter. Firewood is being sold for $179.00/cord, but Chandra estimates he will need 300 kg. If the conversion factor is 375 kg/cord, how much will he spend on firewood?

a. $157.52
b. $143.20
c. $114.56
d. $100.24

hort Answer

1. The weight of a snow machine is 850 lb. If the ice on a lake is tested to hold weights of up to 0.8 tons, is it safe for a father weighing 160 lb to take his two children, weighing 62 lb and 78 lb, out onto the ice?

2. Farmer Joe's cows eat 0.4 tons of hay every week. If the hay bales cost $5.25 per 50 pound bale, how much will it cost Joe to feed his cows for a week? He cannot buy partial bales.

3. Lobster is being sold for $21.08/lb. What would be the price of a 0.66 kg lobster?

4. The conversion factor for eggplant is 33 lb/bu. What would be the weight of 9 bushels, in kilograms?

5. After a year of drought, wheat is being sold for $13.10/bu. A farm sells $45 404.60 worth of wheat. How many bushels has the farm sold?

Problem

1. Your SI unit candy thermometer displays a temperature of 80°C in the fudge you are cooking. Your cookbook says the fudge batter must be heated to exactly 175°F.

   a) Is your mixture above or below this temperature?

   b) How many degrees Celsius away from 175°F is the mixture?

2. The daytime temperature on a warm spring day was 22.2°C, dropping to 9.5°C overnight.

   a) If your thermostat turns on the air conditioning at temperatures above 79°F, does the air conditioning turn on? Show your work.

   b) What are the daytime and nighttime temperatures in degrees Fahrenheit?

   c) What is the change in temperature over this 24-hour period in degrees Fahrenheit?

3. The sculpture Harjit is working on requires two different types of plaster.

   a) The Blue Brand plaster costs $38.40 for a 60-lb bag. What is the cost per ounce of this plaster?

   b) Harjit requires 11 lb 9 oz of Blue Brand. What is the true cost of this plaster if the rest of the bag will not be used?

   c) The Excel Brand plaster costs $7.38 for a 5-lb 2-oz bag. What is the cost per ounce of this plaster?

   d) Harjit will use 4 lb 8 oz of Excel plaster. What is the true cost of this plaster?

4. Lentils are sold for $0.42/100 g.

   a) What is the cost of 0.8 kg of lentils?

   b) A batch of lentil soup requires 300 g of lentils. What would be the cost to buy lentils for this recipe?

   c) A catering company needs to make a triple batch of soup. How many kilograms of lentils will they purchase?

   d) How much money will the catering company spend on lentils for this soup?

5. An elevator has a maximum capacity of 1350 lb. Billy weighs 165 lb and he has 30 pallets of paper to deliver in the building. Each pallet weighs 80 kg.

   a) What is the capacity of the elevator in kilograms?

   b) If Billy always rides the elevator with his paper deliveries, how much remaining capacity does the elevator have in kilograms?

   c) How many pallets at a time can Billy load into the elevator? He cannot load partial pallets.

   d) How many trips will Billy make to deliver all the paper?

Grade 10 Review 4
Answer Section
MULTIPLE CHOICE

1. ANS: D PTS: 1 DIF: Easy REF: 4.1
   OBJ: Measurement LOC: M-SO2 TOP: Temperature Conversions
   KEY: Converting from Celsius to Fahrenheit
2. ANS: D PTS: 1 DIF: Easy REF: 4.1
   OBJ: Measurement LOC: M-SO1 TOP: Temperature Conversions
   KEY: Converting from Celsius to Fahrenheit
3. ANS: D PTS: 1 DIF: Easy REF: 4.1
   OBJ: Measurement LOC: M-SO2 TOP: Temperature Conversions
   KEY: Converting from Fahrenheit to Celsius
4. ANS: B PTS: 1 DIF: Easy REF: 4.1
   OBJ: Measurement LOC: M-SO2 TOP: Temperature Conversions
   KEY: Converting from Fahrenheit to Celsius
5. ANS: D PTS: 1 DIF: Easy REF: 4.1
   OBJ: Measurement LOC: M-SO2 TOP: Temperature Conversions
   KEY: Converting from Fahrenheit to Celsius
6. ANS: D PTS: 1 DIF: Moderate REF: 4.2
   OBJ: Measurement LOC: M-SO2 TOP: Mass in the Imperial System
   KEY: Converting between imperial units
7. ANS: B PTS: 1 DIF: Moderate REF: 4.2
   OBJ: Measurement LOC: M-SO2 TOP: Mass in the Imperial System
   KEY: Converting between imperial units
8. ANS: A PTS: 1 DIF: Easy REF: 4.2
   OBJ: Measurement LOC: M-SO2 TOP: Mass in the Imperial System
   KEY: Converting between imperial units
9. ANS: B PTS: 1 DIF: Moderate REF: 4.2
   OBJ: Measurement LOC: M-SO2 TOP: Mass in the Imperial System
   KEY: Converting between imperial units
10. ANS: C PTS: 1 DIF: Moderate REF: 4.3
    OBJ: Measurement LOC: M-SO1 TOP: Mass in the Système International
    KEY: Converting between SI units
11. ANS: D PTS: 1 DIF: Moderate REF: 4.3
    OBJ: Measurement | Number LOC: M-SO1 | N-SO1
    TOP: Mass in the Système International KEY: Converting between SI units
12. ANS: A PTS: 1 DIF: Easy REF: 4.3
    OBJ: Measurement LOC: M-SO1 TOP: Mass in the Système International
    KEY: Converting between SI units
13. ANS: C PTS: 1 DIF: Easy REF: 4.4
    OBJ: Measurement LOC: M-SO1 TOP: Making Conversions
    KEY: Converting from SI to imperial units
14. ANS: D PTS: 1 DIF: Difficult REF: 4.4
    OBJ: Measurement LOC: M-SO1 TOP: Making Conversions
    KEY: Converting between SI units
15. ANS: B PTS: 1 DIF: Moderate REF: 4.4
    OBJ: Number LOC: N-SO1 TOP: Making Conversions
    KEY: Conversion factor

SHORT ANSWER

1. ANS: Add the weights of the snow machine and people.
   $850 + 160 + 62 + 78 = 1150$ lb

   Convert to tons.
   $1150 \text{ lb} \times (1 \text{ tn}/2000 \text{ lb}) = 0.575 \text{ tn}$

   Yes, it is safe to go out on the ice.

   PTS: 1 DIF: Moderate REF: 4.2 OBJ: Measurement
   LOC: M-SO2 TOP: Mass in the Imperial System KEY: Converting between imperial units
2. ANS: Convert the amount of hay needed to pounds.
   $0.4 \text{ tn} \times (2000 \text{ lb/tn}) = 800 \text{ lb}$

   Calculate the number of hay bales needed.
   $800 \text{ lb} \times (1 \text{ bale}/50 \text{ lb}) = 16 \text{ bales}$

   Calculate the cost.
   $16 \text{ bales} \times \$5.25/\text{bale} = \$84.00$

   It will cost Farmer Joe $84.00 to feed his cows for a week.

   PTS: 1 DIF: Moderate REF: 4.2 OBJ: Measurement | Number
   LOC: M-SO2 | N-SO1 TOP: Mass in the Imperial System
   KEY: Converting between imperial units
3. ANS: Convert the weight of the lobster to pounds.
   $0.66 \text{ kg} \times 2.2 \text{ lb/kg} = 1.452 \text{ lb}$

   Multiply by the cost per pound.
   $1.452 \text{ lb} \times \$21.08/\text{lb} = \$30.61$

   The lobster would cost $30.61.

   PTS: 1 DIF: Moderate REF: 4.3 OBJ: Measurement | Number
   LOC: M-SO1 | N-SO1 TOP: Mass in the Système International
   KEY: Converting from SI to imperial units
4. ANS: Calculate the weight in pounds.
   $9 \text{ bu} \times 33 \text{ lb/bu} = 297 \text{ lb}$

   Convert to kilograms.
   $297 \text{ lb} \div 2.2 \text{ lb/kg} = 135.0 \text{ kg}$

   9 bushels of eggplant would weigh 135.0 kg.

   PTS: 1 DIF: Easy REF: 4.4 OBJ: Measurement
   LOC: M-SO2 TOP: Making Conversions KEY: Conversion factor
5. ANS: $\$45\,404.60 \times (1 \text{ bu}/\$13.10) = \textit{num}$ bushels

   The farm has sold 3466 bushels of wheat.

   PTS: 1 DIF: Easy REF: 4.4 OBJ: Number
   LOC: N-SO1 TOP: Making Conversions

ROBLEM

1. ANS:
   a) Convert the desired temperature to degrees Celsius.

$$C = \frac{5}{9}(F - 32)$$

$$C = \frac{5}{9}(175 - 32)$$

$$C = 79.4°C$$

Your mixture is above the ideal temperature.

   b) Calculate the difference in temperature.
$80 - 79.4 = 0.6°C$

Your mixture is 0.6 degrees Celsius above the ideal temperature.

PTS: 1 DIF: Moderate REF: 4.1 OBJ: Measurement
LOC: M-SO2 TOP: Temperature Conversions
KEY: Converting from Fahrenheit to Celsius

2. ANS:
   a) Convert 79°F to degrees Celsius.

$$C = \frac{5}{9}(F - 32)$$

$$C = \frac{5}{9}(79 - 32)$$

$$C = 26.1°C$$

No, the air conditioning will not turn on.

   b) Daytime:

$$F = \frac{9}{5}C + 32$$

$$F = \left(\frac{9}{5} \times 22.2\right) + 32$$

$$F = 72.0°F$$

Nighttime:

$$F = \frac{9}{5}C + 32$$

$$F = \left(\frac{9}{5} \times 9.5\right) + 32$$

$$F = 49.1°F$$

The daytime temperature is 72.0°F and the nighttime temperature is 49.1°F.

   c) $72.0 - 49.1 = 22.9°F$

The change in temperature is 22.9°F.

PTS: 1 DIF: Moderate REF: 4.1 OBJ: Measurement
LOC: M-SO2 TOP: Temperature Conversions
KEY: Converting from Celsius to Fahrenheit

3. ANS:

a) Convert the weight of the bag to ounces.
60 lb × 16 oz/lb = 960 oz

Divide the cost of the bag by the weight.
$38.40 ÷ 960 oz = $0.04/oz

Blue Brand plaster costs $0.04/oz.

b) Convert the weight of plaster used to ounces.
11 lb 9 oz = (11 × 16) + 9 oz

11 lb 9 oz = 185 oz

Divide the cost of the bag by the weight of plaster used.
$38.40 ÷ 185 oz = $0.21/oz

The true cost of the plaster is $0.21/oz.

c) Convert the weight of the bag to ounces.
5 lb 2 oz = (5 × 16) + 2 oz

5 lb 2 oz = 82 oz

Divide the cost of the bag by the weight.
$7.38 ÷ 82 oz = $0.09/oz

Excel Brand plaster costs $0.09/oz.

d) Convert the weight of plaster used to ounces.
4 lb 8 oz = (4 × 16) + 8 oz

4 lb 8 oz = 72 oz

Divide the cost of the bag by the weight of plaster used.
$7.38 ÷ 72 oz = $0.10/oz

The true cost of the plaster is $0.10/oz.

PTS: 1 DIF: Difficult REF: 4.2 OBJ: Measurement | Number
LOC: M-SO2 | N-SO1 TOP: Mass in the Imperial System
KEY: Converting between imperial units

4. ANS:

a) 0.8 kg = 800 g

0.8 g × $0.42/100 g = $3.36

0.8 kg of lentils cost $3.36.

b) 300 g × $0.42/100 g = $1.26

It costs $1.26 to buy lentils for the recipe.

c) Calculate the weight of lentils needed, in grams.
300 g × 3 = 900 g

Convert to kilograms.
900 g × 1 kg/1000 g = 0.9 kg

The catering company will need 0.9 kg of lentils.

d) Calculate the cost.
900 g × $0.42/100 g = $3.78

The catering company will spend $3.78 on the lentils for the soup.

PTS: 1 DIF: Moderate REF: 4.3 OBJ: Measurement | Number
LOC: M-SO1 | N-SO1 TOP: Mass in the Système International
KEY: Converting between SI units

5. ANS:

a) 1350 lb × 1 kg/2.2 lb = 613.6 kg

The capacity of the elevator is 613.6 kg.

b) Convert Billy's weight to kilograms.
165 lb × 1 kg/2.2 lb = 75.0 kg

613.6 kg – 75.0 kg = 538.6 kg

The remaining capacity of the elevator is 538.6 kg.

c) Divide the remaining capacity by the weight of one pallet.
538.6 kg ÷ 80 kg/pallet = 6.73 pallets

Since Billy cannot load partial pallets, the maximum he can load at a time is 6 pallets.

d) Divide the total number of pallets by the number of pallets that can be loaded into the elevator per trip.
30 ÷ 6 = 5

It will take Billy 5 trips to deliver all the paper.

PTS: 1 DIF: Difficult REF: 4.3 OBJ: Measurement
LOC: M-SO2 TOP: Mass in the Système International
KEY: Converting from imperial to SI units

rade 10 Review 5

Iultiple Choice

lentify the choice that best completes the statement or answers the question.

___ 1. What is the supplementary angle to 128°?

a. 308°
b. 32°
c. 72°
d. 52°

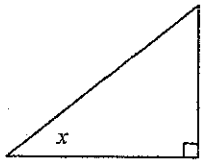
___ 2. The complementary angle to 40° is _____ and the supplementary angle is _____.

a. 120°, 50°
b. 320°, 60°
c. 50°, 140°
d. 60°, 140°

___ 3. Subtracting 90° from a reflex angle will produce an obtuse angle.

a. Always.
b. Sometimes.
c. Never, it will always produce another reflex angle.
d. Never, it will always produce a right angle.

___ 4. The angle x is best estimated to be about _____ degrees.



a. 38
b. 53
c. 58
d. 28

___ 5. A bearing of 57° west of north is closest to which of the following standard bearings?

a. W
b. NW
c. NNW
d. WNW

___ 6. A bearing of 49° east of north is closest to which of the following standard bearings?

a. E
b. NE
c. NNE
d. ENE

___ 7. An unknown angle is bisected. Each resulting angle measures 76°. What is the unknown angle?

a. 142°
b. 147°
c. 76°
d. 152°

___ 8. If the supplement of a 22° angle is bisected, what will each resulting angle measure?

a. 158.0°
b. 34.0°
c. 91.0°
d. 79.0°

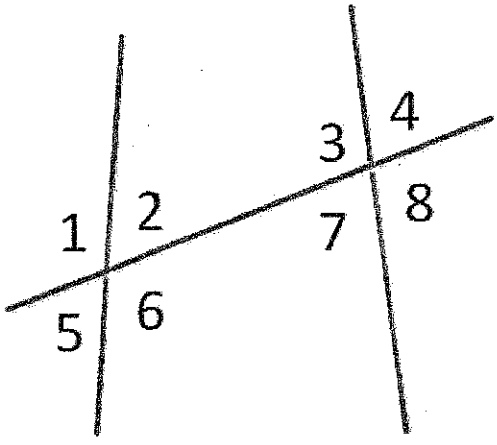
___ 9. If you bisect a reflex angle, the two resulting angles will be obtuse.

a. Always.
b. Sometimes.
c. Never. They will always be acute.
d. Never. You cannot bisect a reflex angle.

___ 10. What is the measure of an angle vertically opposite an angle of 71°?

a. 35.5°
b. 109°
c. 19°
d. 71°

___ 11. In the diagram below, what is the alternate exterior angle to ∠4?



a. ∠3
b. ∠6
c. ∠5
d. ∠7

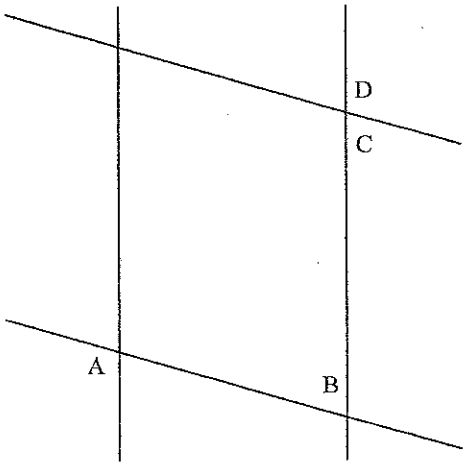
___ 12. A transversal intersects two parallel lines. If one angle is 64°, what will the corresponding angle be?

a. 68°
b. 64°
c. 116°
d. 26°

___ 13. Two interior angles lie on the same side of a transversal that intersects two parallel lines. If one angle is 143°, what will the other angle be?

a. 150°
b. 37°
c. 72°
d. 53°

___ 14. In the diagram below, opposing lines are parallel. If ∠A is 108°, what is the measure of ∠B?



a. 108°
b. 54°
c. 18°
d. 72°

___ 15. What conditions are required for two lines, intersected by a transversal, to be parallel?

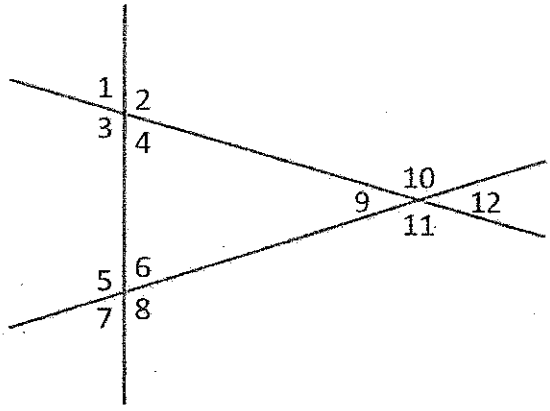
a. The vertically opposite angles must be equal to each other.
b. The alternate exterior angles must be supplementary.
c. The corresponding angles must be equal to each other.
d. All of the above.

hort Answer

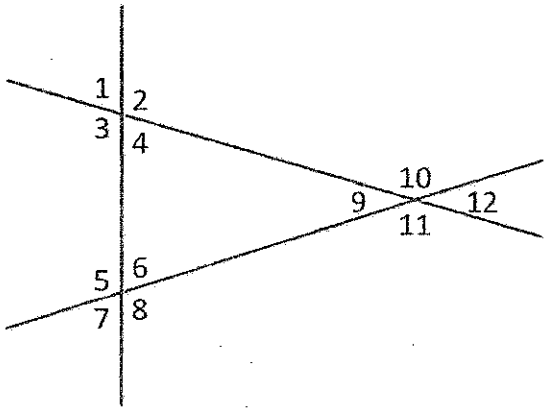
1. A ship is sailing directly NW. What is its true bearing?

2. An angle of 44° is bisected. What is the measure of each resulting angle?

3. In the diagram below, which angle is vertically opposite to ∠8?



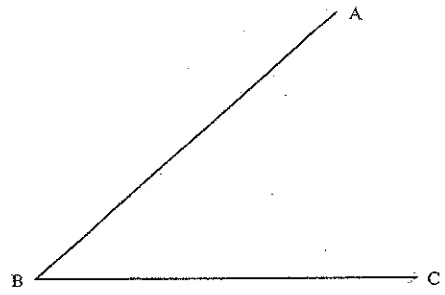
4. In the diagram below, name two alternate exterior angles to ∠1.



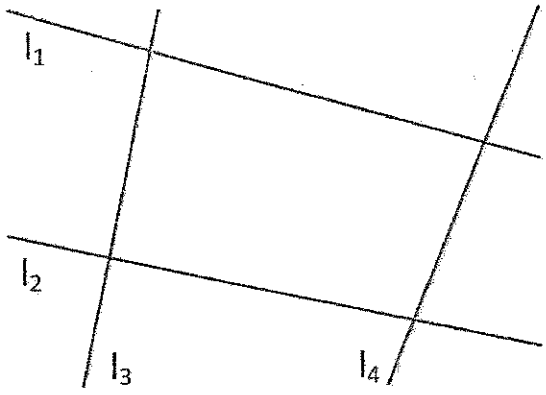
5. A transversal intersects two parallel lines. What will be the measure of an angle corresponding to an angle of 44°?

Problem

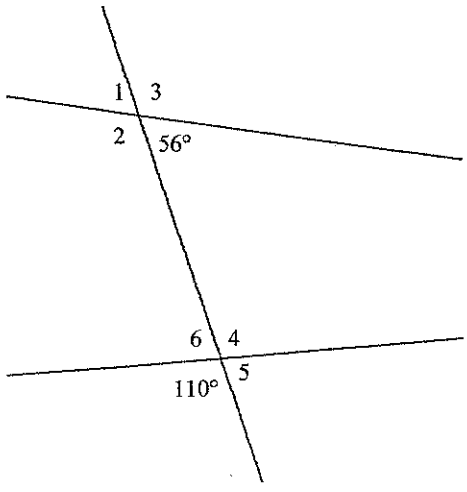
1. Bisect $\angle ABC$ using a straight edge and compass.



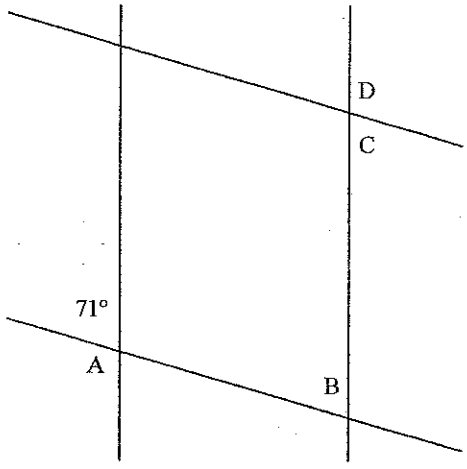
2. In the figure below, name a pair of lines and their transversal.



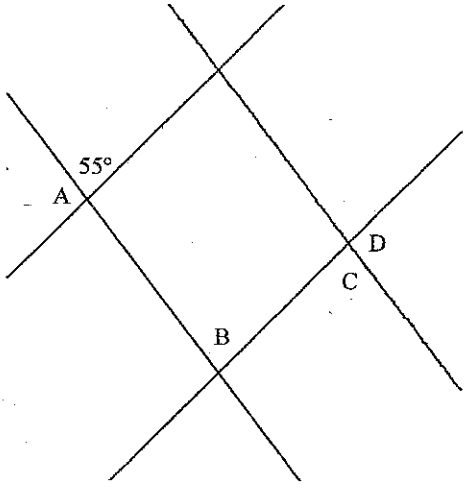
3. Calculate the sizes of the six angles indicated in the figure below.



4. In the diagram below, opposing lines are parallel. Determine the value of $\angle A$. Explain your reasoning.



5. In the diagram below, opposing lines are parallel. Determine the value of $\angle B$. Explain your reasoning.



Grade 10 Review 5
Answer Section

MULTIPLE CHOICE

1. ANS: D PTS: 1 DIF: Easy REF: 5.1
   OBJ: Geometry LOC: G-SO5 TOP: Measuring, Drawing, and Estimating Angles
   KEY: Supplementary angles
2. ANS: C PTS: 1 DIF: Easy REF: 5.1
   OBJ: Geometry LOC: G-SO5 TOP: Measuring, Drawing, and Estimating Angles
   KEY: Complementary angles | Supplementary angles
3. ANS: B PTS: 1 DIF: Moderate REF: 5.1
   OBJ: Geometry LOC: G-SO6 TOP: Measuring, Drawing, and Estimating Angles
   KEY: Naming angles
4. ANS: A PTS: 1 DIF: Moderate REF: 5.1
   OBJ: Geometry LOC: G-SO6 TOP: Measuring, Drawing, and Estimating Angles
   KEY: Estimating Angles
5. ANS: D PTS: 1 DIF: Difficult REF: 5.1
   OBJ: Geometry LOC: G-SO6 TOP: Measuring, Drawing, and Estimating Angles
   KEY: Bearings
6. ANS: B PTS: 1 DIF: Difficult REF: 5.1
   OBJ: Geometry LOC: G-SO6 TOP: Measuring, Drawing, and Estimating Angles
   KEY: Bearings
7. ANS: D PTS: 1 DIF: Easy REF: 5.2
   OBJ: Geometry LOC: G-SO6 TOP: Angle Bisectors and Perpendicular Lines
   KEY: Bisecting angles
8. ANS: D PTS: 1 DIF: Moderate REF: 5.2
   OBJ: Geometry LOC: G-SO6 TOP: Angle Bisectors and Perpendicular Lines
   KEY: Supplementary angles | Bisecting angles
9. ANS: A PTS: 1 DIF: Difficult REF: 5.2
   OBJ: Geometry LOC: G-SO6 TOP: Angle Bisectors and Perpendicular Lines
   KEY: Bisecting angles
10. ANS: D PTS: 1 DIF: Easy REF: 5.3
    OBJ: Geometry LOC: G-SO5 TOP: Non-Parallel Lines and Transversals
    KEY: Vertically opposite angles
11. ANS: C PTS: 1 DIF: Easy REF: 5.3
    OBJ: Geometry LOC: G-SO5 TOP: Non-Parallel Lines and Transversals
    KEY: Alternate exterior angles
12. ANS: B PTS: 1 DIF: Easy REF: 5.4
    OBJ: Geometry LOC: G-SO5 TOP: Parallel Lines and Transversals
    KEY: Corresponding angles
13. ANS: B PTS: 1 DIF: Moderate REF: 5.4
    OBJ: Geometry LOC: G-SO5 TOP: Parallel Lines and Transversals
    KEY: Interior angles on the same side of the transversal
14. ANS: D PTS: 1 DIF: Moderate REF: 5.4
    OBJ: Geometry LOC: G-SO5 TOP: Parallel Lines and Transversals
    KEY: Parallel Lines and Transversals
15. ANS: C PTS: 1 DIF: Difficult REF: 5.4
    OBJ: Geometry LOC: G-SO5 TOP: Parallel Lines and Transversals
    KEY: Parallel Lines and Transversals

HORT ANSWER

1. ANS:

   Calculate the angle from the vertical. Northwest is $\frac{1}{2}$ of the way from west to north.

   True bearing = (N to W) + $\frac{1}{2}$(W to N)

   True bearing = $270° + \frac{1}{2}(90°)$

   True bearing = $315°$

   The ship's true bearing is 315°.

   PTS: 1 DIF: Moderate REF: 5.1 OBJ: Geometry
   LOC: G-SO6 TOP: Measuring, Drawing, and Estimating Angles
   KEY: Bearing

2. ANS:
   $44° \div 2 = 22°$

   Each resulting angle measures 22°.

   PTS: 1 DIF: Easy REF: 5.2 OBJ: Geometry
   LOC: G-SO6 TOP: Angle Bisectors and Perpendicular Lines
   KEY: Bisecting angles

3. ANS:
   $\angle 5$

   PTS: 1 DIF: Easy REF: 5.3 OBJ: Geometry
   LOC: G-SO5 TOP: Non-Parallel Lines and Transversals
   KEY: Vertically opposite angles

4. ANS:
   $\angle 8$ and $\angle 11$

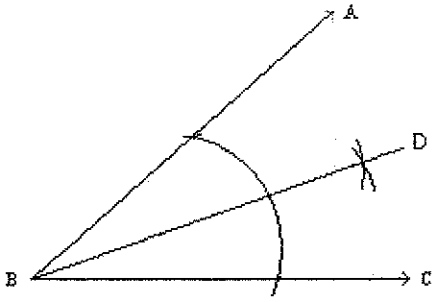
   PTS: 1 DIF: Moderate REF: 5.3 OBJ: Geometry
   LOC: G-SO5 TOP: Non-Parallel Lines and Transversals
   KEY: Alternate exterior angles

5. ANS:
   When two parallel lines are intersected by a transversal, the corresponding angles are equal. Therefore, the corresponding angle will be 44°.

   PTS: 1 DIF: Easy REF: 5.4 OBJ: Geometry
   LOC: G-SO5 TOP: Parallel Lines and Transversals KEY: Corresponding angles

PROBLEM

1. ANS:



To draw a ray, BD, that bisects $\angle ABC$, follow these steps:

- With the compass point at B, draw an arc to intersect BA and BC at X and Y, respectively.
- With the compass point at X and the radius more than half of XY, draw a small arc in the interior of $\angle ABC$.
- With the same radius and compass point at Y, draw a small arc to intersect this arc at D.
- Join B and D.

BD is the bisector of $\angle ABC$.

PTS: 1 DIF: Difficult REF: 5.2 OBJ: Geometry
LOC: G-SO6 TOP: Angle Bisectors and Perpendicular Lines
KEY: Bisecting angles

2. ANS:
There are four possible answers:

- Lines l_1 and l_2 with transversal l_3.
- Lines l_1 and l_2 with transversal l_4.
- Lines l_3 and l_4 with transversal l_1.
- Lines l_3 and l_4 with transversal l_2.

PTS: 1 DIF: Easy REF: 5.3 OBJ: Geometry
LOC: G-SO5 TOP: Non-Parallel Lines and Transversals
KEY: Transversals

3. ANS:
$\angle 1$ is vertically opposite to the given angle of 56°.
$\angle 1 = 56°$

$\angle 2$ is supplementary to the given angle of 56°.
$\angle 2 = 180° - 56°$

$\angle 2 = 124°$

$\angle 3$ is vertically opposite $\angle 2$.
$\angle 3 = 124°$

$\angle 4$ is vertically opposite the given angle of 110°.
$\angle 4 = 110°$

$\angle 5$ is supplementary to the given angle of 110°.
$\angle 5 = 180° - 110°$

$\angle 5 = 70°$

$\angle 6$ is vertically opposite $\angle 5$.
$\angle 6 = 70°$

PTS: 1 DIF: Moderate REF: 5.3 OBJ: Geometry
LOC: G-SO5 TOP: Non-Parallel Lines and Transversals
KEY: Non-Parallel Lines and Transversals

4. ANS:
$\angle A$ is supplementary to the 71° angle.

$\angle A = 180° - 71°$

$\angle A = 109°$

PTS: 1 DIF: Moderate REF: 5.4 OBJ: Geometry
LOC: G-SO5 TOP: Parallel Lines and Transversals KEY: Supplementary angles

5. ANS:
$\angle B$ is a corresponding angle to the 55° angle. When two parallel lines are intersected by a transversal, corresponding angles are equal. Therefore, $\angle B$ is 55°.

PTS: 1 DIF: Moderate REF: 5.4 OBJ: Geometry
LOC: G-SO5 TOP: Parallel Lines and Transversals KEY: Corresponding angles

Grade 10 Review 6
Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. A table of width 5.25 ft and length 7.25 ft is similar to another table of length 9.06 m and width x. What is the measure of x?

a. 5.81 m
b. 4.20 m
c. 6.56 m
d. 10.51 m

____ 2. A parallelogram has interior angles of 54° and 126° and side lengths of 2 m and 4.6 m. A second parallelogram has side lengths of 10 m and 23 m. What must the interior angles of the second parallelogram be for the two shapes to be similar?

a. 36°, 77°
b. 54°, 126°
c. 36°, 126°
d. 77°, 126°

____ 3. A rectangular exercise trampoline is 2.5 m wide and 6 ft long. A large rectangular recreation trampoline is much bigger, but a similar shape. If it is 10 m wide, how long is it?

a. 24 ft
b. 25 ft
c. 3.5 ft
d. 12 ft

____ 4. Any two regular pentagons can be considered similar shapes.

a. Always.
b. Sometimes. They must have the same side lengths.
c. Sometimes. It depends on the orientation of the pentagons.
d. Never.

____ 5. If the scale on a map of the world is 750 km:1 cm, what distance would be represented by 12 cm on the map?

a. 9000 km
b. 9030 km
c. 9050 km
d. 8970 km

____ 6. A stop sign has eight sides. What must you know about the sign in order to produce more stop signs of a similar shape?

a. The stop sign's height and width.
b. The stop sign's side lengths and angles.
c. The stop sign's size and weight.
d. The stop sign's number of sides.

____ 7. A carpet is 6 m wide and 8 m long. It is similar to another carpet that is 12 m wide. What is its length?

a. 21 m
b. 18.25 m
c. 16 m
d. 13 m

____ 8. A pen flashlight has a length of 7 cm and a width of 1 cm. A searchlight has a length of 1.19 m and a width of 17 cm. The dimensions of the searchlight are how many times bigger than the flashlight?

a. 20 times
b. 19 times
c. 17 times
d. 13 times

____ 9. A drawing of a staircase measures 6 cm in height, but the actual staircase measures 660 cm in height. What is the scale factor?

a. 110
b. 105
c. 120
d. 85

___ 10. The blueprints of a building show its height as 6 feet, but the actual building measures 840 feet in height. What is the scale factor?

a. 115
b. 135
c. 150
d. 140

___ 11. A miniature of a statue is 4 cm tall. If the full-scale statue is larger by a factor of 54, what is the height of the statue?

a. 2.16 m
b. 14 m
c. 1.76 m
d. 5.16 m

___ 12. A square of unknown side lengths is enlarged to a new square of similar shape. If the area of the new square is 20 times larger than the original, what was the scale factor?

a. 4.47
b. 10.00
c. 20.00
d. 6.77

___ 13. A right triangle has a base of 46 cm. A similar triangle has a base of 874 cm. How many times larger is the similar triangle?

a. 19
b. 17
c. 18
d. 20

___ 14. Two right triangles will be similar in shape.

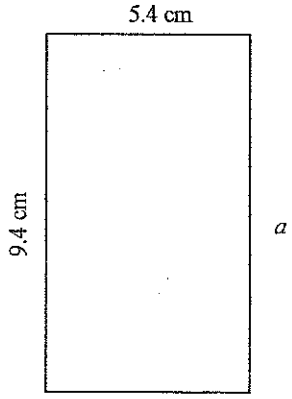
a. Never.
b. Sometimes. The two acute angles must add to 90°.
c. Sometimes. The two pairs of corresponding angles must be the same.
d. Always.

___ 15. A right triangle and an isosceles triangle can be similar in shape.

a. Always.
b. Sometimes. Their angles must add to 180°.
c. Sometimes. Only if the angles are 45°, 45°, and 90°.
d. Never.

hort Answer

1. In the diagram below, 1 cm:9.3 m. What is the length of side a in metres? (The figure is not drawn to scale.)

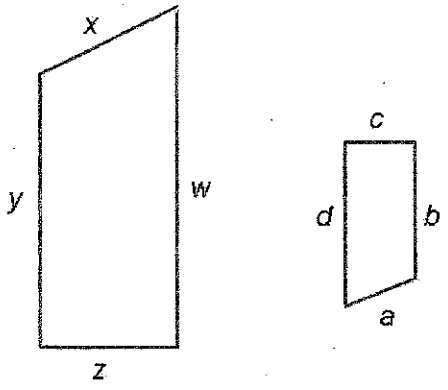


2. Janine constructed a dollhouse modelled after her own house. The hallway of the dollhouse is 6 inches long and 4 inches wide. If the hallway in her actual house is 9 feet long and 5 feet wide, is the dollhouse actually similar to Janine's house?

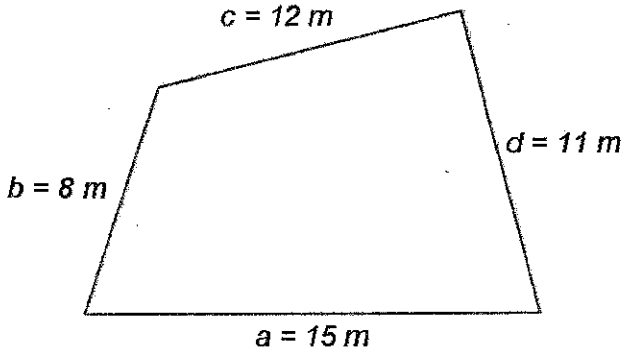
3. The diagrams below have the following dimensions:

$w = 22.1$ mm	$a = 3.3$ mm
$x = 10.725$ mm	$b = 6.1$ mm
$y = 19.825$ mm	$c = 3$ mm
$z = 9.75$ mm	$d = 6.8$ mm

Are the two objects similar shapes? Explain.



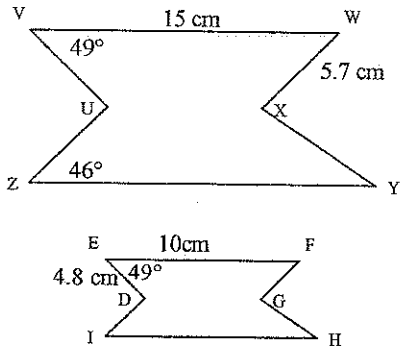
4. What would be the length of c if the diagram below were scaled by a factor of 0.51?



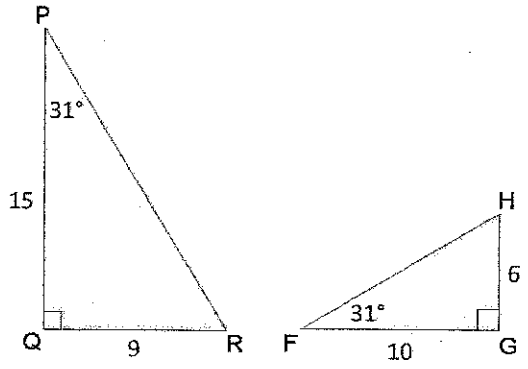
5. A triangle has side lengths of 6 cm, 9 cm, and 11 cm. The shortest side of a similar triangle is 21 cm. What are the lengths of its other two sides?

Problem

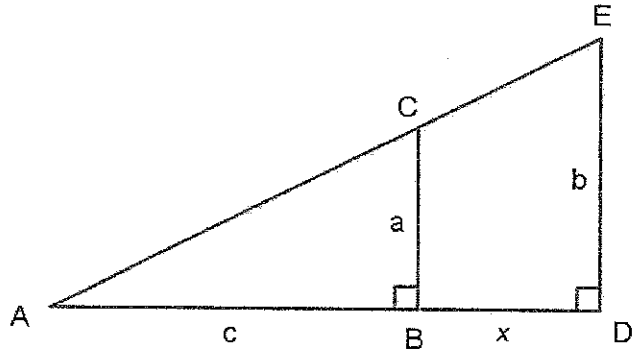
1. What is the value of $\angle I$ if the two shapes are similar? Explain.



2. Frank claims that the two triangles are not similar. This is because $\frac{15}{9}$ is not equal to $\frac{6}{10}$. Is Frank correct? Explain.

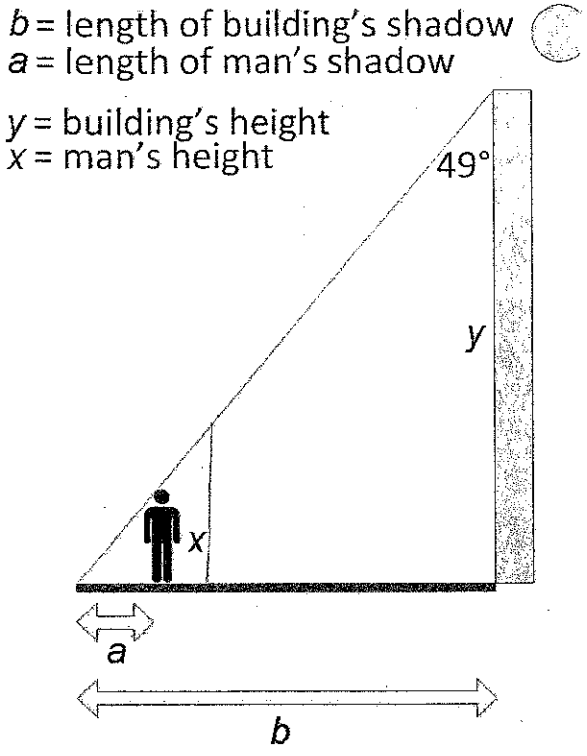


3. Calculate the value of side length x in the diagram if:
   $a = 6$ cm
   $b = 9$ cm
   $c = 8$ cm



4. Can a right triangle and equilateral triangle ever be similar? Explain.

5. In the picture below, a man observes his shadow on the ground. The casting of his shadow creates a similar triangle to that of the nearby building. If a is 2.4 m and b is 14.4 m, how tall is the building if the man is 1.6 m tall?



Grade 10 Review 6
Answer Section

MULTIPLE CHOICE

1. ANS: C PTS: 1 DIF: Moderate REF: 6.1
   OBJ: Geometry LOC: G-SO3 TOP: Similar Polygons
   KEY: Similar Polygons
2. ANS: B PTS: 1 DIF: Moderate REF: 6.1
   OBJ: Geometry LOC: G-SO3 TOP: Similar Polygons
   KEY: Similar Polygons
3. ANS: A PTS: 1 DIF: Difficult REF: 6.1
   OBJ: Geometry LOC: G-SO3 TOP: Similar Polygons
   KEY: Similar Polygons
4. ANS: A PTS: 1 DIF: Easy REF: 6.2
   OBJ: Geometry LOC: G-SO3 TOP: Determining if Two Polygons are Similar
   KEY: Similar Polygons
5. ANS: A PTS: 1 DIF: Easy REF: 6.2
   OBJ: Geometry LOC: G-SO3 TOP: Determining if Two Polygons are Similar
   KEY: Scale
6. ANS: B PTS: 1 DIF: Easy REF: 6.2
   OBJ: Geometry LOC: G-SO3 TOP: Determining if Two Polygons are Similar
   KEY: Similar Polygons
7. ANS: C PTS: 1 DIF: Moderate REF: 6.2
   OBJ: Geometry LOC: G-SO3 TOP: Determining if Two Polygons are Similar
   KEY: Scale
8. ANS: C PTS: 1 DIF: Difficult REF: 6.2
   OBJ: Geometry LOC: G-SO3 TOP: Determining if Two Polygons are Similar
   KEY: Scale
9. ANS: A PTS: 1 DIF: Easy REF: 6.3
   OBJ: Geometry LOC: G-SO3 TOP: Drawing Similar Polygons
   KEY: Scale
10. ANS: D PTS: 1 DIF: Easy REF: 6.3
    OBJ: Geometry LOC: G-SO3 TOP: Drawing Similar Polygons
    KEY: Scale
11. ANS: A PTS: 1 DIF: Moderate REF: 6.3
    OBJ: Geometry LOC: G-SO3 TOP: Drawing Similar Polygons
    KEY: Scale
12. ANS: A PTS: 1 DIF: Difficult REF: 6.3
    OBJ: Geometry LOC: G-SO3 TOP: Drawing Similar Polygons
    KEY: Scale
13. ANS: A PTS: 1 DIF: Moderate REF: 6.4
    OBJ: Geometry LOC: G-SO3 TOP: Similar Triangles
    KEY: Similar Triangles
14. ANS: C PTS: 1 DIF: Difficult REF: 6.4
    OBJ: Geometry LOC: G-SO3 TOP: Similar Triangles
    KEY: Similar Triangles
15. ANS: C PTS: 1 DIF: Difficult REF: 6.4
    OBJ: Geometry LOC: G-SO3 TOP: Similar Triangles
    KEY: Similar Triangles

SHORT ANSWER

1. ANS:
   Side a is equal in length to the side opposite it.
   1 cm equals 9.3 m, so multiply the length of the opposite side on the diagram by 9.3.
   $9.4 \text{ cm} \times 9.3 \text{ m/cm} \approx 87.4 \text{ m}$
   The length of d is 87.4 m.

   PTS: 1 DIF: Difficult REF: 6.1 OBJ: Geometry
   LOC: G-SO3 TOP: Similar Polygons KEY: Similar Polygons

2. ANS: For the dollhouse and house to be similar, their dimensions must be proportional.
   Length: $9 \div 6 = 1.5$
   Width: $5 \div 4 = 1.25$
   $1.5 \neq 1.25$

   The scale factors of the dimensions of the hallway are not the same, so the dollhouse is not similar to the actual house.

   PTS: 1 DIF: Easy REF: 6.2 OBJ: Geometry
   LOC: G-SO3 TOP: Determining if Two Polygons are Similar
   KEY: Scale

3. ANS: Match up the corresponding sides by rotating the second object by 180°. Calculate whether the ratios between the side lengths of the two shapes are equal.
   $w \div d = 22.1 \div 6.8$
   $w \div d = 3.25$

   $x \div a = 10.725 \div 3.3$
   $x \div a = 3.25$

   $y \div b = 19.825 \div 6.1$
   $y \div b = 3.25$

   $z \div c = 9.75 \div 3$
   $z \div c = 3.25$
   The ratios are the same, so the shapes are similar.

   PTS: 1 DIF: Easy REF: 6.2 OBJ: Geometry
   LOC: G-SO3 TOP: Determining if Two Polygons are Similar
   KEY: Scale

4. ANS: $12 \times 0.51 = 6.12 \text{ m}$
   The length of c would be 6.12 m.

   PTS: 1 DIF: Easy REF: 6.3 OBJ: Geometry
   LOC: G-SO3 TOP: Drawing Similar Polygons KEY: Scale

5. ANS: Calculate the scale factor between the shortest sides of the two triangles.
   $21 \div 6 = 3.5$
   The larger triangle is 3.5 times bigger than the smaller triangle. Calculate the lengths of the other two sides.
   $9 \text{ cm} \times 3.5 = 31.5 \text{ cm}$

   $11 \text{ cm} \times 3.5 = 38.5 \text{ cm}$

   The other two sides of the larger triangle are 31.5 cm and 38.5 cm.

   PTS: 1 DIF: Moderate REF: 6.4 OBJ: Geometry
   LOC: G-SO3 TOP: Similar Triangles

PROBLEM

1. ANS:
For UVWXYZ to be similar to DEFGHI, the corresponding angles must be equal. Therefore, $\angle I$ must be equal to $\angle Z$.

$\angle I = \angle Z$

$\angle I = 46°$

$\angle I$ must equal 46°.

PTS: 1 DIF: Easy REF: 6.1 OBJ: Geometry
LOC: G-SO3 TOP: Similar Polygons KEY: Similar Polygons

2. ANS:
Frank is not correct. In order to compare the triangles, he needed to compare the ratios of the corresponding sides of the two triangles, not the sides of the same triangle. ΔPQR should be compared to ΔFGH. If the triangles are similar, the ratio between sides PQ and FG should be the same as QR to GH.

$\frac{PQ}{FG} = \frac{15}{10}$

$\frac{PQ}{FG} = 1.5$

$\frac{QR}{GG} = \frac{9}{6}$

$\frac{QR}{GG} = 1.5$

The two triangles are similar.

PTS: 1 DIF: Moderate REF: 6.2 OBJ: Geometry
LOC: G-SO3 TOP: Determining if Two Polygons are Similar
KEY: Scale

3. ANS:
ΔABC and ΔADE are similar because they share $\angle A$, and right triangles are similar if one pair of corresponding angles is congruent.

Calculate the ratio of side lengths.

$\frac{b}{a} = \frac{9}{6}$

$\frac{b}{a} = 1.5$

Therefore, the ratio between *AB* and *AD* must be 1.5.

$$\frac{AD}{AB} = 1.5$$

$$\frac{c+x}{c} = 1.5$$

$$c + x = c \times 1.5$$

$$x = (c \times 1.5) - c$$

$$x = (8 \times 1.5) - 8$$

$$x = 12 - 8$$

$$x = 4 \text{ cm}$$

Side length x is 4 cm long.

PTS: 1 DIF: Moderate REF: 6.4 OBJ: Geometry
LOC: G-SO3 TOP: Similar Triangles KEY: Similar Triangles

4. ANS:
No. An equilateral triangle has interior angles all measuring 60°, by definition. A right triangle must have at least one right angle of 90° and therefore cannot have similar angles to the equilateral triangle.

PTS: 1 DIF: Easy REF: 6.4 OBJ: Geometry
LOC: G-SO3 TOP: Similar Triangles KEY: Similar Triangles

5. ANS:
Since the triangles are similar, a must be proportional to b, and x and y must be in the same proportion.

$$\frac{b}{a} = \frac{y}{x}$$

$$\frac{14.4}{2.4} = \frac{y}{1.6}$$

$$1.6 \times \frac{14.4}{2.4} = \frac{y}{1.6} \times 1.6$$

$$1.6 \times \frac{14.4}{2.4} = y$$

$$9.6 = y$$

The building is 9.6 m tall.

PTS: 1 DIF: Difficult REF: 6.4 OBJ: Geometry
LOC: G-SO3 TOP: Similar Triangles KEY: Similar Triangles

Grade 10 Review 7

Multiple Choice

Identify the choice that best completes the statement or answers the question.

___ 1. Which of the following is a Pythagorean triple?

a. 11, 60, 61
b. 34, 84, 86
c. 34, 77, 111
d. 11, 111, 144

___ 2. A ladder is 5 m long. If it is leaning against a wall, with the bottom of the ladder 1.5 m away from the base of the wall, how high up the wall will it reach?

a. 2.57 m
b. 5.22 m
c. 3.67 m
d. 4.77 m

___ 3. A rectangle has a length of 12 cm and an area of 120 cm^2. What is the length of the diagonal of the rectangle?

a. 17.62 cm
b. 15.62 cm
c. 120.60 cm
d. 119.40 cm

___ 4. A right triangle has a hypotenuse of 16 cm. If one of the angles is 27°, what is the length of the opposite side?

a. 8.15 cm
b. 8.47 cm
c. 7.26 cm
d. 14.26 cm

___ 5. The cosine ratio relates to which two sides of a right triangle?

a. The side adjacent to a given angle and the vertical side.
b. The side adjacent to a given angle and the hypotenuse.
c. The side adjacent to a given angle and the opposite side.
d. The side opposite a given angle and the hypotenuse.

___ 6. What is the cosine of 32°?

a. 0.625
b. 0.564
c. 0.848
d. 0.530

___ 7. A right triangle has a hypotenuse of 17 cm. If one of the angles is 23°, what is the adjacent side?

a. 7.85 cm
b. 15.65 cm
c. 7.22 cm
d. 6.64 cm

___ 8. A right triangle has a hypotenuse of 39 cm. If one of the angles is 83°, what is the adjacent side?

a. 39.92 cm
b. 317.63 cm
c. 38.71 cm
d. 4.75 cm

___ 9. A right triangle has a leg of 3.5 cm and the adjacent angle is 8.4°. What is the length of the hypotenuse?

a. 35.26 cm
b. 23.70 cm
c. 23.96 cm
d. 3.54 cm

____ 10. A right triangle has a leg of 3.6 cm and the adjacent angle is 35.4°. What is the length of the hypotenuse?

a. 6.21 cm
b. 17.51 cm
c. 5.07 cm
d. 4.42 cm

____ 11. What is the tangent of 55°?

a. 0.853
b. 0.819
c. 1.428
d. 0.574

____ 12. A right triangle has one angle of 34°. If the side opposite the given angle measures 15.3 cm, what is the length of its adjacent side?

a. 22.68 cm
b. 38.56 cm
c. 18.46 cm
d. 27.36 cm

____ 13. What is $\tan^{-1}(0.14)$?

a. 8.05°
b. 39.25°
c. 7.97°
d. 81.95°

____ 14. What is $\tan^{-1}(1.03)$?

a. 40.25°
b. 31.20°
c. 59.52°
d. 45.85°

____ 15. A right triangle has an unknown angle. If the opposite side is 69.9 m and adjacent side is 70.6 m, what is the measure of the angle?

a. 20.38°
b. 48.11°
c. 44.71°
d. 23.78°

Short Answer

1. Will a pencil that is 15 cm long fit into a pencil case that is 13 cm long and 10 cm wide?

2. A right triangle with a hypotenuse of 25 m must have legs that are at least 3 m in length. What is the maximum length that either of the legs can be?

3. A staircase has stairs that are each 22 cm deep. The angle of elevation of the staircase is 35.4°. What is the height of one stair?

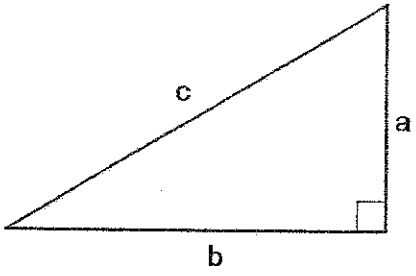
4. A children's slide makes an angle of 38° with the ground. If the slide takes up 3.1 m of ground space, how tall is it?

5. A man is 195.5 cm tall. If the sun is shining at an angle of elevation of 50°, how long is the man's shadow?

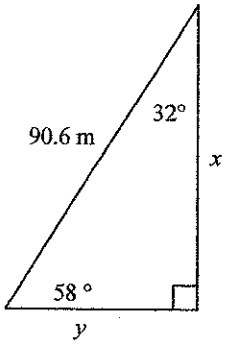
Problem

1. A right triangle has a leg measuring $6x^3$ and a hypotenuse measuring $10x^3$. What is the length of the other leg?

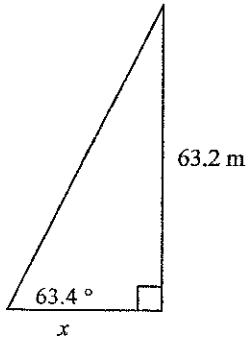
2. If the two legs of the right triangle below must be positive whole numbers, how large can the hypotenuse be if a plus b equals 29 mm?



3. Find x and y to one decimal place, using sine ratios.



4. Find x to one decimal place.



5. A right triangle has a hypotenuse of 5 m. If sin A equals 0.7, what is the length of the side adjacent to $\angle A$?

Grade 10 Review 7
Answer Section

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: Easy REF: 7.1
   OBJ: Geometry LOC: G-SO2 TOP: The Pythagorean Theorem
   KEY: Pythagorean Theorem
2. ANS: D PTS: 1 DIF: Moderate REF: 7.1
   OBJ: Algebra | Geometry LOC: A-SO1 | G-SO2
   TOP: The Pythagorean Theorem KEY: Pythagorean Theorem
3. ANS: B PTS: 1 DIF: Difficult REF: 7.1
   OBJ: Algebra | Geometry LOC: A-SO1 | G-SO2
   TOP: The Pythagorean Theorem KEY: Pythagorean Theorem
4. ANS: C PTS: 1 DIF: Moderate REF: 7.2
   OBJ: Algebra | Geometry LOC: A-SO1 | G-SO4
   TOP: The Sine Ratio KEY: Sine ratio
5. ANS: B PTS: 1 DIF: Easy REF: 7.3
   OBJ: Geometry LOC: G-SO4 TOP: The Cosine Ratio
   KEY: Cosine ratio
6. ANS: C PTS: 1 DIF: Easy REF: 7.3
   OBJ: Geometry LOC: G-SO4 TOP: The Cosine Ratio
   KEY: Cosine ratio
7. ANS: B PTS: 1 DIF: Moderate REF: 7.3
   OBJ: Algebra | Geometry LOC: A-SO1 | G-SO4
   TOP: The Cosine Ratio KEY: Cosine ratio
8. ANS: D PTS: 1 DIF: Moderate REF: 7.3
   OBJ: Algebra | Geometry LOC: A-SO1 | G-SO4
   TOP: The Cosine Ratio KEY: Cosine ratio
9. ANS: D PTS: 1 DIF: Moderate REF: 7.3
   OBJ: Algebra | Geometry LOC: A-SO1 | G-SO4
   TOP: The Cosine Ratio KEY: Cosine ratio
10. ANS: D PTS: 1 DIF: Moderate REF: 7.3
    OBJ: Algebra | Geometry LOC: A-SO1 | G-SO4
    TOP: The Cosine Ratio KEY: Cosine ratio
11. ANS: C PTS: 1 DIF: Easy REF: 7.4
    OBJ: Geometry LOC: G-SO4 TOP: The Tangent Ratio
    KEY: Tangent ratio
12. ANS: A PTS: 1 DIF: Easy REF: 7.4
    OBJ: Algebra | Geometry LOC: A-SO1 | G-SO4
    TOP: The Tangent Ratio KEY: Tangent ratio
13. ANS: C PTS: 1 DIF: Easy REF: 7.5
    OBJ: Algebra LOC: A-SO1 TOP: Finding Angles and Solving Right Triangles
    KEY: Inverse trigonometric function
14. ANS: D PTS: 1 DIF: Easy REF: 7.5
    OBJ: Algebra LOC: A-SO1 TOP: Finding Angles and Solving Right Triangles
    KEY: Inverse trigonometric function
15. ANS: C PTS: 1 DIF: Easy REF: 7.5

OBJ: Algebra | Geometry LOC: A-SO1 | G-SO4
TOP: Finding Angles and Solving Right Triangles KEY: Inverse trigonometric function

SHORT ANSWER

1. ANS: Calculate the diagonal for the pencil case.

$$d^2 = 13^2 + 10^2$$
$$d^2 = 169 + 100$$
$$d^2 = 269$$
$$d = \sqrt{269}$$
$$d = 16.4 \text{ cm}$$

Yes, the pencil will fit in the case.

PTS: 1 DIF: Easy REF: 7.1 OBJ: Algebra | Geometry
LOC: A-SO1 | G-SO2 TOP: The Pythagorean Theorem
KEY: Pythagorean Theorem

2. ANS: Minimizing one leg will maximize the other.

$$a^2 + b^2 = c^2$$
$$3^2 + b^2 = 25^2$$
$$b^2 = 25^2 - 3^2$$
$$b^2 = 616.0$$
$$b = \sqrt{616.0}$$
$$b = 24.82 \text{ m}$$

If the minimum length of one leg is 3 m, the maximum length of the other leg must be 24.82 m.

PTS: 1 DIF: Difficult REF: 7.1 OBJ: Algebra | Geometry
LOC: A-SO1 | G-SO2 TOP: The Pythagorean Theorem
KEY: Pythagorean Theorem

3. ANS:
$$\tan A = \frac{\text{opp}}{\text{adj}}$$
$$\tan 35.4^\circ = \frac{\text{opp}}{22}$$
$$22 \tan 35.4^\circ = \text{opp}$$
$$15.6 \text{ cm} = \text{opp}$$

Each stair is 15.6 cm high.

PTS: 1 DIF: Easy REF: 7.4 OBJ: Algebra | Geometry
LOC: A-SO1 | G-SO4 TOP: The Tangent Ratio
KEY: Tangent ratio

4. ANS: $\tan A = \frac{\text{opp}}{\text{adj}}$

$$\tan 38° = \frac{\text{opp}}{3.1}$$

$$3.1 \tan 38° = \text{opp}$$

$$2.4 \text{ m} = \text{opp}$$

The slide is 2.4 m tall.

PTS: 1 DIF: Moderate REF: 7.4 OBJ: Algebra | Geometry
LOC: A-SO1 | G-SO4 TOP: The Tangent Ratio
KEY: Tangent ratio

5. ANS: $\tan A = \frac{\text{opp}}{\text{adj}}$

$$\tan 50° = \frac{195.5}{\text{adj}}$$

$$\text{adj} = \frac{195.5}{\tan 50°}$$

$$\text{adj} = 164.0 \text{ cm}$$

The man's shadow is 164.0 cm long.

PTS: 1 DIF: Moderate REF: 7.4 OBJ: Algebra | Geometry
LOC: A-SO1 | G-SO4 TOP: The Tangent Ratio
KEY: Tangent ratio

PROBLEM

1. ANS: $a^2 + b^2 = c^2$

$$(6x^3)^2 + b^2 = (10x^3)^2$$

$$b^2 = (10x^3)^2 - (6x^3)^2$$

$$b^2 = 100x^6 - 36x^6$$

$$b^2 = 64x^6$$

$$b = \sqrt{64x^6}$$

$$b = 8x^3$$

The length of the other leg is $8x^3$.

PTS: 1 DIF: Difficult REF: 7.1 OBJ: Algebra | Geometry
LOC: A-SO1 | G-SO2 TOP: The Pythagorean Theorem
KEY: Pythagorean Theorem

2. ANS: The hypotenuse is maximized when one of the legs is maximized. This can be observed by trying different positive whole numbers and checking the results.

$$c^2 = a^2 + b^2$$

$$c^2 = 28^2 + 1^2$$

$$c^2 = 785$$

$$c = \sqrt{785}$$

$$c = 28.02$$

The maximum hypotenuse length is 28.02 mm.

PTS: 1 DIF: Difficult REF: 7.1 OBJ: Algebra | Geometry
LOC: A-SO1 | G-SO2 TOP: The Pythagorean Theorem
KEY: Pythagorean Theorem

3. ANS: Solve for x using the 58.0° angle and the hypotenuse.

$$\sin A = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 58.0° = \frac{x}{90.6}$$

$$90.6 \sin 58.0° = x$$

$$76.8 \text{ m} = x$$

Solve for y using the 32.0° angle and the hypotenuse.

$$\sin B = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 32.0° = \frac{y}{90.6}$$

$$90.6 \sin 32.0° = y$$

$$48 \text{ m} = y$$

The measure of x is 76.8 m and the measure of y is 48 m.

PTS: 1 DIF: Moderate REF: 7.2 OBJ: Algebra | Geometry
LOC: A-SO1 | G-SO4 TOP: The Sine Ratio
KEY: Sine ratio

4. ANS: $\tan A = \frac{\text{opp}}{\text{adj}}$

$$\tan 63.4° = \frac{63.2}{x}$$

$$x = \frac{63.2}{\tan 63.4°}$$

$$x = 31.6 \text{ m}$$

The measure of x is 31.6 m.

PTS: 1 DIF: Easy REF: 7.4 OBJ: Algebra | Geometry
LOC: A-SO1 | G-SO4 TOP: The Tangent Ratio
KEY: Tangent ratio

5. ANS: Use the sine ratio to find the measure of $\angle A$.

$\sin A = 0.7$

$A = \sin^{-1}(0.7)$

$A = 44.43°$

Use the cosine ratio to find the adjacent side length.

$$\cos A = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 44.43° = \frac{\text{adj}}{5}$$

$$5 \cos 44.43° = \text{adj}$$

$$3.6 \text{ m} = \text{adj}$$

The adjacent side is 3.6 m long.

PTS: 1 DIF: Moderate REF: 7.5 OBJ: Algebra | Geometry
LOC: A-SO1 | G-SO4 TOP: Finding Angles and Solving Right Triangles
KEY: Inverse trigonometric function