1. (a) Solve the proportion \( \frac{5\frac{3}{5}}{H} = \frac{21}{11} \). 

\[
\begin{align*}
H &= \frac{5\frac{3}{5} \cdot 11 \cdot \frac{1}{2} + 3}{\frac{11}{15}} \\
&= \frac{5\frac{3}{5} \cdot 11}{2 \frac{14}{15}} \\
&= \frac{5 \cdot 11}{2 \frac{14}{15}} \\
&= \frac{55}{2 \frac{14}{15}} \\
&= \frac{55}{\frac{34}{15}} \\
&= \frac{55 \cdot 15}{34} \\
&= \frac{825}{34} \\
&= 24.2647 \\
&\approx 24.26
\end{align*}
\]

(b) Find the best buy. Brand A: 22 oz at $1.90, or Brand B: 48 oz at $4.04, or Brand C: 35 oz at $2.98. Compare the three ratios. Give a sentence answer.

\[
\begin{align*}
\text{Brand } A &: \frac{22}{1.9} = 11.5789 \\
\text{Brand } B &: \frac{48}{4.04} = 11.8812 \quad \text{(highest)} \\
\text{Brand } C &: \frac{35}{2.98} = 11.744966 \quad \text{(lowest)} \\
\text{Brand } C &: \frac{35}{2.98} = 8.51428 \quad \text{(is best)}
\end{align*}
\]

Brand B is the best buy.

2. If we can drive 760 miles on 32 gallons of gas, how far can we drive on 22 gallons of gas? (Set up and solve a proportion to solve the problem. Check, and answer with a sentence.)

\[
\begin{align*}
\frac{\text{miles}}{\text{gallons}} &= \frac{760}{32} = \frac{D}{22} \\
760 \times 22 &= 32 \times D \\
D &= \frac{760 \times 22}{32} \\
&= 522.5 \\
\end{align*}
\]

Check:

\[
\begin{align*}
\frac{760}{32} &= \frac{522.5}{22} \quad \text{or} \\
760 \times 22 &= 32 \times 522.5 \\
23.75 &= 23.75 \\
16720 &= 16720
\end{align*}
\]

We can drive 522.5 miles on 22 gallons.
SURVEY OF MATHEMATICS TEST THREE
NAME: SOLUTIONS
SHOW ALL CALCULATIONS. SIMPLIFY ANSWERS. GIVE SENTENCE ANSWERS WITH CORRECT UNITS.
BEST EIGHT PROBLEMS COUNT, FOR A SCORE OUT OF 100.

(12.5 points) 3. (a) Convert \( \frac{33}{40} \) to a percent. Do not round.

\[
\frac{33}{40} \times 100\% = \frac{3300}{40} \% = 82.5\% \text{ or } 82\frac{1}{2}\% 
\]

(b) 402 out of 600 people in a survey are in favor of a ballot proposition. What percent of these people are in favor of the proposition?

\[
R = \frac{402}{600} = 0.67 = 67\% 
\]

(c) Convert 7.2% to a decimal. Do not round.

\[
7.2 \div 100 = 0.072 
\]

(d) Convert 10\(\frac{4}{5}\)% to a reduced fraction.

\[
10\frac{4}{5}% = \frac{54}{5} \cdot \frac{1}{100} = \frac{54}{500} = \frac{27}{250} 
\]

(12.5 points) 4. A store is holding a sale offering a 14% discount.

(a) Find the sale price of a DVD with a regular price of $18.40.

\[
\text{Discount is } 14\% \text{ of } 18.40. \quad 14(18.40) = 2.576 
\]

\[
\text{Discount is } \$2.58. \quad 18.40 - 2.58 = 15.82 
\]

The sale price is $15.82.

(b) Find the regular price of a sofa with a discount of $42.45. Regular price is $p$.

\[
42.45 = 14p, \quad p = 42.45 \div 14 = 303.2142857
\]

The regular price is $303.21. ($303.68 to $303.24, work, actually.)

(c) Find the regular price of a chair whose sale price is $135.85.

\[
100 - 14 = 86 \quad 135.85 \text{ is } 86\% \text{ of reg. price} 
\]

\[
135.85 = .86p, \quad p = 135.85 \div .86 = 157.9651163 
\]

The regular price is $157.97. ($157.96 also works.)

GO TO PAGE 3.
SURVEY OF MATHEMATICS TEST THREE NAME: SOLUTIONS
SHOW ALL CALCULATIONS. SIMPLIFY ANSWERS. GIVE SENTENCE ANSWERS WITH CORRECT UNITS.
BEST EIGHT PROBLEMS COUNT, FOR A SCORE OUT OF 100.


(12.5 points) 5. (a) Find the **payoff amount**, using the banker's year of 360 days, if $892.00 is borrowed at 7.5% simple interest for a time of 50 days.

\[ I = Prt = 892 \times 0.075 \times \frac{50}{360} = 9.29 \]

The interest is $9.29.

The payoff is $891.29.

(b) Find the **sales tax and cost** of a $254.99 item if the sales tax rate is $8\frac{1}{4}\%$.

\[ \text{Tax is } 8\frac{1}{4}\% \text{ of } 254.99. \quad 0.0825 \times 254.99 = 21.04375 \]

The sales tax is $21.04.

The cost (to the buyer) is $276.03.

(12.5 points) 6. (a) Find the **total amount** in an account after 8 years if $650 was deposited at 6%, compounded **annually**.

\[ A = P(1+r)^t = 650(1.06)^8 \]

\[ = 1036.001248 \]

The amount is $1036.00.

(b) Find the **total amount** in an account after 8 years if $650 was deposited at 6%, compounded **monthly**.

\[ A = P(1+\frac{r}{12})^{12t} = 650(1+\frac{0.06}{12})^{12(8)} \]

\[ = 1036.001248 \]

(6 points) 7. (a) A **triangle** has base 22 cm and height 13 cm. Find its area.

\[ A = \frac{1}{2}bh = \frac{1}{2}(22 \text{ cm})(13 \text{ cm}) = 143 \text{ cm}^2 \]

The area is 143 cm$^2$.

(b) A **trapezoid** has bases 34 cm and 44 cm and height 11 cm. Find its area.

\[ A = \frac{1}{2}(11)(34+44) = \frac{1}{2}(11)(78) = 11(39) = 429 \]

The area is 429 cm$^2$.

GO TO PAGE 4.
8. A circle has diameter 96.000 m. Rounded to three decimal places, find its

(a) radius is \( 48.000 \) m.

\[ r = \frac{1}{2} d = \frac{1}{2} (96) = 48 \]

(b) circumference is approximately 301.593 m.

\[ C = \pi d = 96\pi = 301.5928947 \]

(c) enclosed area

\[ A = \pi r^2 = 48^2 \pi = 2304\pi \]

\[ = 7238.229474 \]

The area is approx. 7238.229 m\(^2\).

9. Find the missing dimensions in the figure below, then find (with correct units)

(a) the perimeter of the above figure.

\[ 52 \text{ m} \]

(b) the area of the above figure.

\[ 89 \text{ m}^2 \]

\[ 8(13) - 3(5) = 104 - 15 = 89 \]

\[ 3(13) + 2(5^2) = 39 + 50 = 89 \]