Collect Group Projects
Worksheets
Review for Test #3
PowerPoint 27
**Quiz** on rational expressions, exponents

Homework: Topic 25, page 269, 270
Happy Halloween!
Simplify: \( \frac{2}{9x} \div 4x^5 \)

\[
\frac{2}{9x} \times \frac{1}{4x^5} = \frac{1}{18x^6}
\]
\[
\text{Simplify: } \frac{3}{3} \cdot \frac{3}{4x^2} + \frac{8}{3x} \cdot \frac{4x}{4x} \cdot \frac{9 + 32x}{12x^2}
\]
Simplify: \( \frac{6x + \frac{4x}{9}}{1} \)

\[
\frac{54x + 4x}{9} = \frac{58x}{9}
\]
Solve for $x$:

\[
\sqrt[4]{\frac{(4x-5)^2}{3}} - \frac{(x-2)}{4} = \frac{-1}{12}
\]

\[
4\left(\frac{(4x-5)^2}{3}\right) - 3(x-2) = -1
\]

\[
16x - 20 - 3x + 6 = -1
\]

\[
13x - 14 = -1
\]

\[
13x = 13
\]

\[
x = 1
\]
5. Solve for $x$: \[
\frac{18}{2} \left( \frac{x-4}{9} \right) - \frac{5}{18} = \frac{5}{18}
\]

\[
9(x-4) - 2(x-3) = 5
\]

\[
9x - 36 - 2x + 6 = 5
\]

\[
7x - 30 = 5
\]

\[
+30 +30
\]

\[
7x = 35
\]

\[
\therefore x = 5
\]
Compute the following using a calculator:

1. $8^{-3}$

2. $-8^{-3}$

3. $(-8)^{-3}$

4. $(3.8 \times 10^5)(6.2 \times 10^7)$
Compute the following using a calculator:
1. $8^{-4}$

2. $-8^{-4}$

3. $(-8^{-4})$

4. $(8.3 \times 10^8)(2.6 \times 10^6)$
Simplify, write with positive exponents.

5. \(8x^5x^3\)

6. \((8x^3)^2\)
Simplify, write with positive exponents.

4. \(7x^4 x^3\)

6. \((7x^4)^3\)
Simplify, write with positive exponents.

5. \( 7x^4 x^3 \)

6. \( (7x^4)^3 \)
7. \( \left( \frac{x^5}{2} \right)^{-3} \)
8. Use the formula \( P = A \left[ \frac{i}{1-(1+i)^{-n}} \right] \)

- \( P \) is the payment
- \( A \) is the amount of the loan
- \( n \) is the number of payments
- \( i \) is the interest rate per month

TJ Ridge is borrowing $25,000 to buy a car. He takes out a 60 month loan at 6% annual interest. (Hint: \( i = .06/12 \)). Find Tom's monthly payments.
9. Given \( FV = P(1 + i)^n \), find the future value of $1500 deposit if the annual rate is 8% compounded monthly for 20 years. (Hint: \( i = \frac{.08}{12} \) and \( n = 12 \cdot 20 \))
7. \( \left( \frac{x^4}{2} \right)^{-3} \)

8. \( \frac{x^{-3}}{(3x^4)^{-5}} \)
7. \( \left( \frac{x^4}{2} \right)^{-3} \)
\[
\frac{x^{-3}}{(3x^4)^{-5}}
\]
9. \[ \frac{5x^{-3}}{20x^4} \]
8. Use the formula \( P = A \left[ \frac{i}{1-(1+i)^{-n}} \right] \)

- \( P \) is the payment
- \( A \) is the amount of the loan
- \( n \) is the number of payments
- \( i \) is the interest rate per month

TJ Ridge is borrowing $15,000 to buy a car. He takes out a 36 month loan at 6% annual interest. (Hint: \( i = .06/12 \)). Find Tom's monthly payments.
9. Given $FV = P(1 + i)^n$, find the future value of $1500$ deposit if the annual rate is 8% compounded monthly for 20 years. (Hint: $i = \frac{.08}{12}$ and $n = 12 \cdot 20$)
Simplify. Make sure all answers are reduced to lowest terms.

1. \[ \frac{\frac{2x^2}{3y^2}}{\frac{14x}{9y^6}} = \frac{4y^2}{3x^2} \]

2. \[ \frac{4x^2}{x} \cdot \frac{3x^3}{6x} \]

\[ \frac{x^2}{x} \cdot \frac{x^3}{6x} = \frac{2x^3}{3} \]
3. \( \frac{3(2x)}{(2x)} \frac{5}{2x} - \frac{7}{4x^2} \)

\[ \frac{10x - 7}{4x^2} \]

\( (2x) \cdot ? = 4x^2 \)
\[
\begin{align*}
2x & \left( \frac{x + 1}{3x} + \frac{x^2 - 1}{2x^2} \right) \\
& \frac{2x(x+1)}{6x} + \frac{3(x^2-1)}{6x^2} \\
& 6x^2 + 2x + 3x^2 - 3 \\
& 5x^2 + 2x - 3 \\
& 6x^2
\end{align*}
\]
Solve: \[ \frac{3}{4} \cdot 5x - \frac{3}{8} \cdot \frac{2}{3} = \frac{5}{12} \]

\[
15x - 18 = 10
\]

\[
+ 18 \quad 18
\]

\[
\frac{15x}{15} = \frac{28}{15}
\]

\[
x = \frac{28}{15} = 1.87
\]
\[
\begin{align*}
6. \quad \frac{7}{35} \left( \frac{1}{5} - \frac{3x}{7} \right) &= \frac{x}{1} \\
\frac{7}{5} - \frac{35x}{7} &= \frac{35x}{7} \\
7 - 15x &= 35x \\
+15x &= 15x \\
\frac{7}{50} &= \frac{50x}{50} \\
\cdot 14 &= \frac{7}{50} = x
\end{align*}
\]
Simplify, write with positive exponents.

\[
\frac{1}{4x^3} = \frac{1}{4x^5}
\]

\[
\frac{2}{8x^2} = \frac{1}{4x^2x^3}
\]

\[
\frac{25(3x^2)^3}{x^4}
\]

\[
\frac{25(27x^6)}{x^4}
\]

\[
\frac{675x^2}{x^4} = 675x^2
\]
9. \((3x^4)^2\)
10. Compute the following using a calculator: \((6.5 \times 10^{11})(3.2 \times 10^{-3})\)

\[2.08 \times 10^9\]
4. A printer can print 7 pages every 3 minutes. How long will it take to print 81 pages?
Which is a better buy?

77 ounces of laundry detergent for $2.10 or
92 ounces of laundry detergent for $2.70
2. Find the monthly payments on a 5 year car loan of $16,500 at 9% annual interest.

\[ P = A \left( \frac{i}{1-(1+i)^{-n}} \right) \]
There are 2,000 bacteria present initially in a culture. The culture grows at 17% each day.

a. Complete the table.

<table>
<thead>
<tr>
<th>Time</th>
<th>Calculations</th>
<th>Number of Bacteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Day</td>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>1 day later</td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td></td>
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<tr>
<td>3</td>
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<tr>
<td>5</td>
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<tr>
<td>10</td>
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<td></td>
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<tr>
<td>N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>