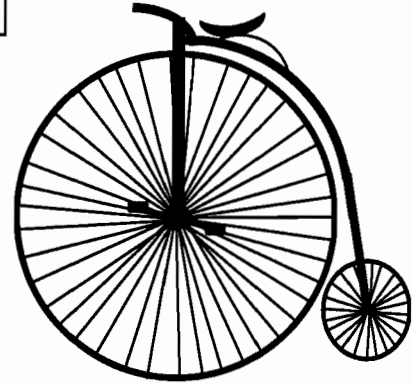# Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

> *The circumference of a circle, C = πd, where d is the diameter*

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
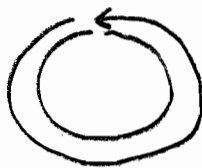   Show how you figured it out.

   _163.28_ ✓ inches |

   $$C = \pi d$$
   $$c = \pi (52) \quad ✓$$
   $$c = 163.28$$

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   _13_ feet _7_ inches ✓ |

   163.28

   $$\begin{array}{r} 13.60\!\!\!\!6 \\ 12\overline{)163.28} \end{array}$$

   $$\begin{array}{r} 163.28 ✓ \\ -156 \\ \hline 7.28 \end{array}$$

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

<u>391.1 turns</u> ✓   1

$$\begin{array}{r} 4.5\overline{35} \\ 3\,\overline{\big)\,13.606} \end{array}$$ about 5 yards

$$4.535\,\overline{\big)\,1760}$$ ✓

2

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

✓

<u>1,121 turns</u>   1

$c = \pi d$

$c = \pi (18)$

$$\begin{array}{r} 4.78 \text{ ft.} \\ 12\,\overline{\big)\,56.52} \text{ in} \end{array}$$

$$\begin{array}{r} 1.57 \text{ yds} \\ 3\,\overline{\big)\,4.21} \end{array}$$ ✓

1

$$\begin{array}{r} 1,121.01 \text{ turns} \\ 1.57\,\overline{\big)\,1760} \end{array}$$
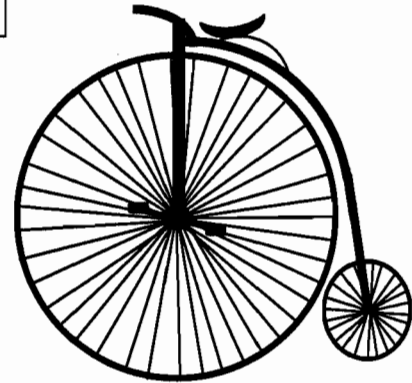
Historic Bicycle ⑨

9

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

T2

> *The circumference of a circle, C = πd, where d is the diameter*
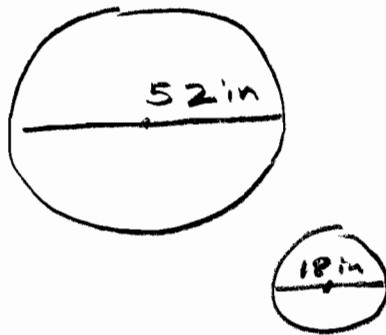
Basil saw a strange old bicycle at the museum.

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At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
   Show how you figured it out.

   $C = \underline{163.28}$ ✓ inches |

   $\pi \cdot 52 = 163.28$ ✓ |

   $\pi \cdot 18 = 56.52$

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   $\underline{13}$ ✓ feet $\underline{6}$ ✗ inches 0

   $12\overline{)163.28}$ ✓ |

Historic Bicycle

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

$\times$
$32 \, times \, 0$

$$C = 163.28$$
$$5,280 \div 163.28 = 32.33$$

(1)

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

$\times$ O

$93 \, times$

$$C = 5,280 \div 56.52 = 93.42$$

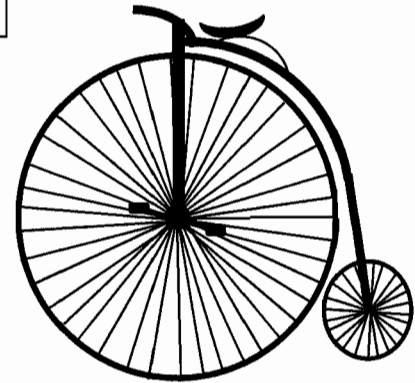$\checkmark$

1

Historic Bicycle

9

5

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

T3

The circumference of a circle, C = πd, where d is the diameter

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
   Show how you figured it out.

   $C = \pi d \quad d = 52$
   $C = \pi \cdot 52$
   $C = 163.362818$

   $\underline{163.36}$ ✓ inches |

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
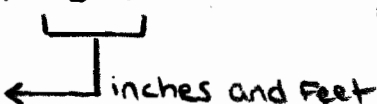   Show how you figured it out.

   C
   $[163.362818 \div 12]$ ✓

   $\wedge$

   $\underline{13}$ ✓ feet $\underline{6}$ ✗ inches   O

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

✓

__388 turns__ |

$$5280 \div 13.6$$ ✓

⎵ inches and Feet

2

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

__1123__ ✓ |

$$\pi \cdot 18 = C$$
$$C = 56.54866776$$

$$[56.55] \div 12$$
$$=$$
$$4.71238898$$

4 Feet 7 inches

$$5280 \div 4.7$$ ✓

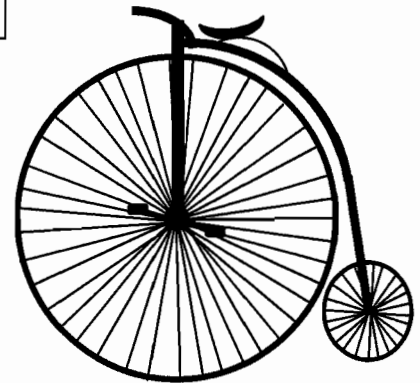$$=$$
$$1123.404255$$

1

9

Historic Bicycle ⑧

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

T4

> *The circumference of a circle, $C = \pi d$, where d is the diameter*

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
   Show how you figured it out.

   $52 \times \pi = 163.362818$

   ✓
   163.362818 inches |

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   $163.362818 \div 12 = 13.61356817$

   ✓ 13 feet 61 ✗ inches 0

   |

Historic Bicycle

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

$\times$

130 turns 0

$$13.61356817 \times 130 = 1769.7\cancel{63862}$$

(1)

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

$\times$

370 turns 0

$$4.71238898 \times \cancel{} 374 = 1742.4334\cancel{4}$$
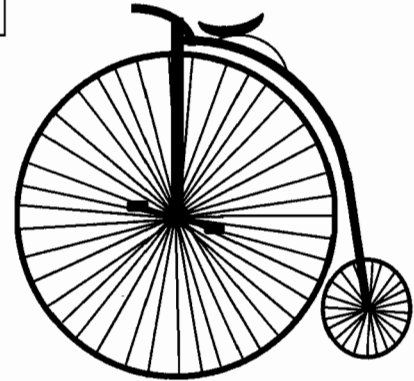
0

Historic Bicycle 4

9

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

T5

The circumference of a circle, C = πd, where d is the diameter

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
   Show how you figured it out.

   163.36 ✓ inches |

   I used the equation at the top

   c=πd and etered 52 inch the   ✓
   diameter into the d the enter

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   13 ✓ feet 7 ✓ inches |

   I divided 163 by 12 which got me how many
   feet and the remainer got me the inches. ✓

   ```
        13
   12)163
      -12
      ---
       43
      -36
      ---
        7
   ```

Historic Bicycle

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

×

~~400 turns~~   0

multiplied 1760 by 3 then divided
by 13 because that's how far
the big wheel turns once

2 ft

4. How many times does the small wheel turn when the cycle travels 1 mile?-
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

✓

1,120 turns   1
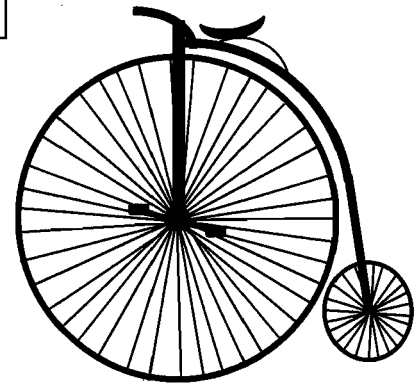
Multiplied 1760 by 3 then divided it
by 4.7 because thats howfar   ✓
the little wheel turns once

1

9

Historic Bicycle 8

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

> *The circumference of a circle, C = πd, where d is the diameter*

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

the big wheel could have a 52 inch diameter and the small wheel could have an 18 inch diameter.

1. What is the circumference of the big wheel?
   Show how you figured it out.

   163.28 ✓ inches |

   $C = π52 = 163.28$ ✓

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   13 ✓ feet 7.28 ✓ inches |

   $\dfrac{163.28}{12=}$ ✓

   13ft 7in

Historic Bicycle

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

S1

5280

$\approx$ 388 times
= 390 times

13ft 7.28 in

$5280 \div 13.61$
=
387.95

2

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

$C = \pi 18$

4.71

$5280 \div 56.52$

$\approx$ 1120 times

1121.019

9

Historic Bicycle 9

Historic Bicycle
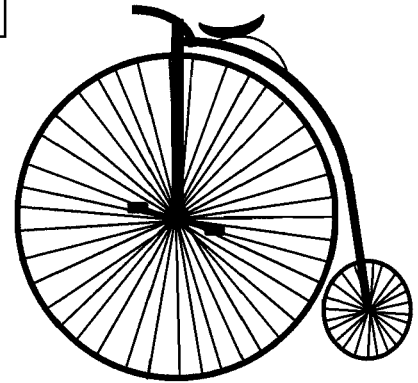
This problem gives you the chance to:
• work with the circumference of a circle

S2

> *The circumference of a circle, C = πd, where d is the diameter*

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

the big wheel could have a 52 inch diameter and the small wheel could have an 18 inch diameter.

1. What is the circumference of the big wheel?
   Show how you figured it out.

   $$C = \pi(52)$$
   $$C = 163.4 \quad \checkmark$$

   _163.4_ ✓ inches |

  |

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   $$\frac{163.4}{12} = 13.6 \quad \checkmark$$

   _13_ ✓ feet _6_ ✗ inches   0

  |

Historic Bicycle

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

$\underline{410 \overset{\times}{\text{ turns.}} \overset{O}{}}$

$$\frac{13}{3} = 4\tfrac{1}{3}$$

$$\frac{1760}{4\tfrac{1}{3}} = 406.15$$

2

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

$\underline{2640 \overset{\times}{\text{ turns.}}} \overset{O}{}$

$$C = \pi(18)$$

$$= \frac{56.5 \text{ in}}{12}$$

$$= \frac{4.\text{ft } 7\text{in.}}{3}$$

$$= 1.5 \text{ yds}$$

$$1760 \times 1.5 = 2640$$
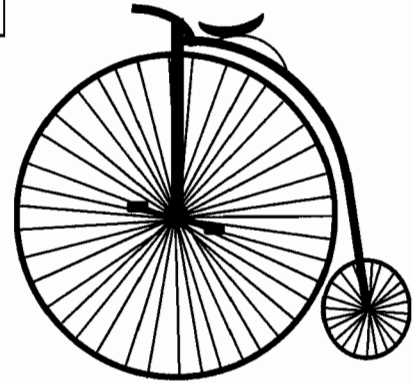$$\times$$

1

9

Page 7   Historic Bicycle 6

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

> *The circumference of a circle, C = πd, where d is the diameter*

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
   Show how you figured it out.

   On the calculator, $52\pi = 163.36$ ✓

   __163.36__ ✓ inches |

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   $12 \times 13 = 156$
   7 left over → 163 $13'7''$

   __13__ ✓ feet __7__ ✓ inches |

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

$7 \div 12 = .58$ One mile = 5280 ft

$5280 \div 13.58 = 388.8$ ✓

2

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

1133 turns ✗   O

$18\pi = 56.54$ ✓
$12 \times 4 = 48$ ✓ $4'8'' = 4.66$ ✗
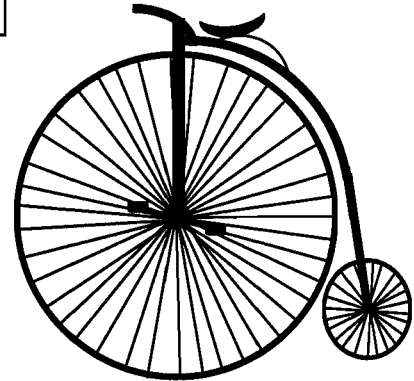8 leftover

$5280 \div 4.66 = 1133$ ✓

1

Historic Bicycle ⑧

9

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

S4

The circumference of a circle, C = πd, where d is the diameter

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
   Show how you figured it out.

   _163.28_ ✓ inches   1

   ∧   0

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

                          ✓
   _13_ feet _7_ inches   1

   ∧   0

Historic Bicycle

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

391.1 ✓ |

0

```
        176
    10|1760
      -16
       ‾‾‾‾
        76
       -70
       ‾‾‾‾
         60
```

∧

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.
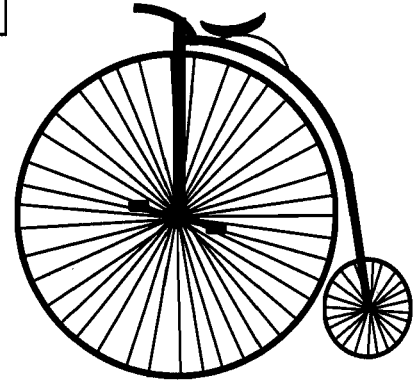
1,121 ✓ |

∧   0

9

Historic Bicycle 4

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

S5

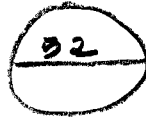> *The circumference of a circle, C = πd, where d is the diameter*

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

Pie = 3.14   52   18

1. What is the circumference of the big wheel?
   Show how you figured it out.

   ✓ __163.28__ inches |

   $$3.14$$
   $$\times\ 52$$
   $$\overline{163.28}$$ ✓

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   ✓ __13__ feet ✗ __6__ inches 0

   12 inch = 1 foot   13.60667
                     12√163.28 ✓ |

Historic Bicycle

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

$$\boxed{3\,2 \text{ times}}^{x} \, 0$$

$$5,280 \text{ in} = 1 \text{ mile}$$

$$5,280 \div 163.28 = 32.33$$

(1)

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

$$\boxed{9\,3 \text{ times}} \, 0$$

$$\text{Small} = 56.52$$

$$5,280 \div 56.52 = 93.41$$
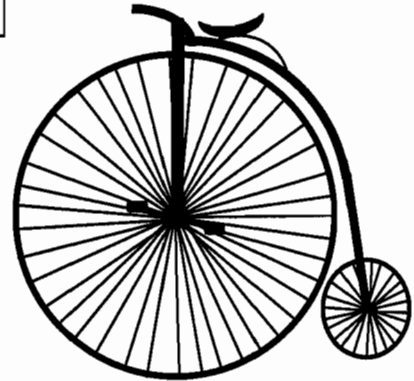
$\checkmark$

1 ft

9

Historic Bicycle 5

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

S6

> *The circumference of a circle, C = πd, where d is the diameter*

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
   Show how you figured it out.

   $\checkmark$
   _163.28_ inches |

$$C = 3.14 \cdot 52''$$ $\checkmark$
$$c = \pi(d)$$ $\checkmark$

2. How far would you travel in one turn of the big wheel?
   Give your answer in ~~feet and inches.~~
   Show how you figured it out.

   $\checkmark$
   _13_ feet _7_ inches |

$$c = 163.28''$$
$$\frac{163.28}{12} = 13'.6$$ $\checkmark$

Historic Bicycle

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

633.68

634 turns ×0

3 feet = 1 yard

1760

700.68

63360 inches =

3 feet = 1 yard
1 Mile = 1760 yards

634
× 2
1268

0

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
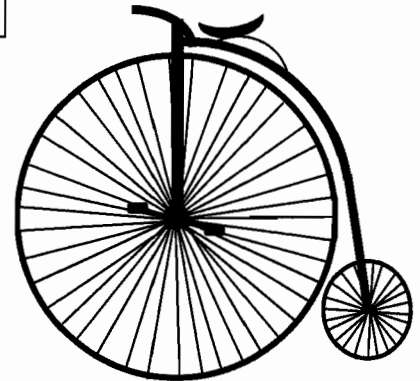   Show how you figured it out.

×
1268   0

0

∧

Historic Bicycle

9

4

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

> *The circumference of a circle, C = πd, where d is the diameter*

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
   Show how you figured it out.

   $C = \pi d$

   $\underline{} = \pi \cdot 52 \qquad \pi 52 = 163.362818$

   $C = 163.362818$

   _163.362818_ ✓ inches |

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   $156 \div 12 = 13ft.$
   $+ 7.362 in.$
   163.362

   _13_ ✓ feet _7.362_ ✓ inches |

   |

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

390 ✓ 1

$$\frac{7}{12} = .583 = 7 \text{in}$$

2

✓

$$1760 \cdot 3 = \frac{5280}{13.583} = \text{Roughly 390 turns}$$

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

✓

1130 ✓ 1

$C = \pi d$

$56.548 = \pi 18$

$\frac{48}{12} = 5$

$48 + 8 = 56$

↑
8in

~~56 in → 1 turn~~

$56.548'' = 1$ turn

big wheel d.
$$\frac{52}{18} = 2.88888889$$
small wheel d.

1

390 = Amount of turns in 1m for big wheel

$390 \cdot 2.88888889 = 1126.666$

Round Up ✓
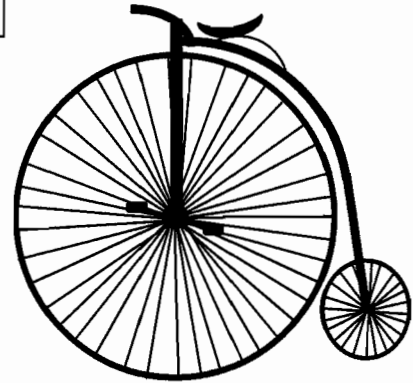
1130 turns

9

9

Historic Bicycle

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

S8

> *The circumference of a circle, C = πd, where d is the diameter*

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
   Show how you figured it out.

   _163.363_ inches

   I multiplied pi by 52 which is the diameter.

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   _13_ feet _7_ inches

   I divided 163 by 12 and got 13.58

Historic Bicycle

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

   _____390 turns_____ ✓ 1

   I multiplied 1760 by 3 and got 5280 feet.
   Then divided 5280 by 13.58 and got 388.809.

   2

   ✓

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

   ×
   _____1240 turns_____ 0

   I figured out the circumfrence. Got the feet
   and inches then did the same thing I did for
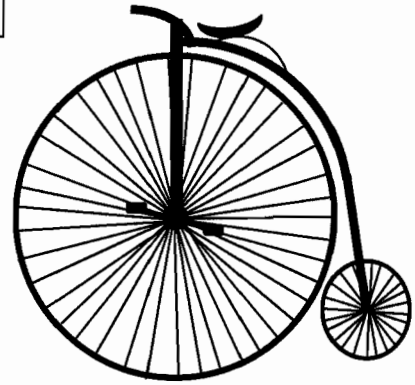   # 3.

   1

9

Historic Bicycle 8

Historic Bicycle

This problem gives you the chance to:
• work with the circumference of a circle

S9

The circumference of a circle, C = πd, where d is the diameter

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
   Show how you figured it out.

   163.28 ✓ inches |

   $π(52)$
   $3.14(52)$
   163.28   ✓

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   13.6066 ✗ feet 163.28 inches   0

   $12\overline{)163.28} = 13.6066$ ✓

   $1\overline{)163.28}$ ∧ |

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.)
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

410. ^x   0

$$1 \text{ turn} = 13 \text{ ft. } 3\overline{)13}^{\,4.3}$$

$$1 \text{ turn} = 4.3 \text{ yds. } 4.3\overline{)1760}^{\,409.30}$$

turns : 409.30

nearest 10 turns 410

2

4. How many times does the small wheel turn when the cycle travels 1 mile?
   Give your answer to the nearest 10 turns.
   Show how you figured it out.

1170 x   0

$\pi(18)$

$3.14(18) = 56.52$

$$12\overline{)56.5}^{\,4.6}$$

$$3\overline{)4.6}$$

1

$1 \text{ turn} = 4.6 \text{ ft}$

$$1 \text{ turn} = 1.5 \text{ yds. } 1.5\overline{)1760}^{\,1173.33}$$

turns : 1173.33

nearest 10 turns : 1170

9

Historic Bicycle 6

Historic Bicycle
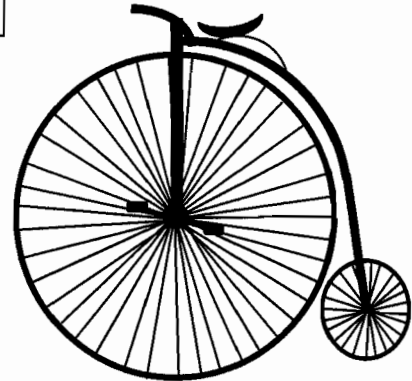
This problem gives you the chance to:
• work with the circumference of a circle

S10

The circumference of a circle, C = πd, where d is the diameter

Basil saw a strange old bicycle at the museum.

It had one very big wheel and one very small one.

It was called an 'Ordinary' or a 'Penny Farthing'.

At home Basil looked it up on the internet and found that:

**the big wheel could have a 52 inch diameter and
the small wheel could have an 18 inch diameter.**

1. What is the circumference of the big wheel?
   Show how you figured it out.

   163.4 ✓ inches |

   $π × 52 = C$ for the big wheel, $C = 163.4$

   ✓

2. How far would you travel in one turn of the big wheel?
   Give your answer in feet and inches.
   Show how you figured it out.

   ✓   ✗
   13 feet **62** inches   O

   $163.4 / 12$ ✓

   ∧ |

S10

3. How many times must the cyclist turn the big wheel to travel 1 mile?
   (A mile is 1760 yards.) →5280 ft →63360 in   ✓
   Give your answer to the nearest 10 turns.   390 turns   1
   Show how you figured it out.   (4)

   Turned 1760 yards to feet, then inches, then divided 63360 in by 163.4 in.

                                              ✓   2

4. How many times does the small wheel turn when the cycle travels 1 mile?   ✓
   Give your answer to the nearest 10 turns.
   Show how you figured it out.   1120 turns   1

   56.5   63360/56.5 (circumference)   ✓   1

Historic Bicycle   9   8